ORDER NO. MAC0203018C2

Service Manual

AIR CONDITIONER

CS-W18BB4P CU-V18BBP5 / CS-W24BB4P CU-V24BBP5 / CS-W24BB4P CU-V24BBP8 / CS-W28BB4P CU-V28BBP5 / CS-W28BB4P CU-V28BBP8 / CS-W34BB4P CU-V34BBP8 / CS-W43BB4P CU-V43BBP8 / CS-W18BB4P CU-W18BBP5 / CS-W24BB4P CU-W24BBP5 / CS-W28BB4P CU-W28BBP5 / CS-W28BB4P CU-W28BBP8 / CS-W34BB4P CU-W34BBP8 / CS-W43BB4P CU-W43BBP8

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

1. SERVICE INFORMATION

Notice of Address setting for NEW Cassette / NEW Outdoor Unit.

The new Cassette / new Outdoor models are possible to have address setting for twin / triple control or group control automatically when main power supply is switched on.
(Manual address setting is also possible by using DSW1 switch on the indoor unit P.C. board.)
However, this address setting is only possible when proper wiring connection is made and indoor unit must be of original unit.

1.1. Example of trouble during test operation

If the below phenomenon is found during test operation, wrong address setting is possible. / Therefore, please inspect the address setting.

1. **LCD display of the wired remote control is not illuminated although the main power supply switch is 'on'.**
2. **LCD display had indicated as normal illumination when power supply switch is 'on', however outdoor unit cannot be operated. / (But, it is necessary to take 3 to 5 minutes for outdoor unit to start from the timing of remote control OFF/ON button is 'on'.) / (For normal operation, the outdoor unit will only start its operation after 3 to 5 minutes upon pressing the OFF/ON button.)**
3. **P.C. board had memorized wrong setting information.**
   A. **If main power supply is switched on with the wrong connection.**
   B. **When changing the connection or combination of units due to re-installation etc.**

      - **When changing the system from twin to triple (triple to twin).**
      - **When changing the system from group control to normal one to one system.**
      - **When making the replacement of units of master and slave etc.**

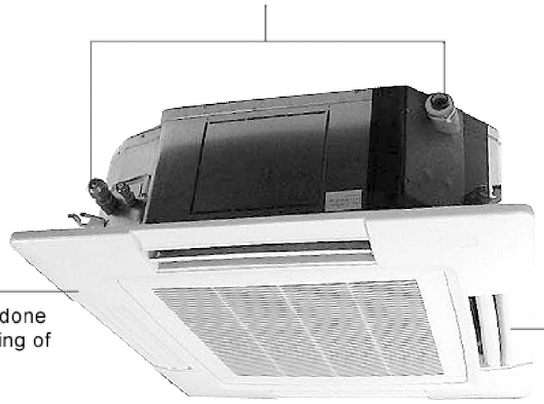
1.2. Caution during test operation

Do not touch the remote control button and do not change any wirings for one minute when the main power supply switch is 'on'. / (Because the unit is having automatic address setting during the first one minute.)

1.3. Caution during automatic address setting

**When the main power supply switch is ‘on’, the P.C. board will automatically memorize the connecting system. / Consequently, when initial power supply is ‘on’, there mustn’t be any interchanging of units even of the same type and same capacity unit.
Therefore, connection of the unit to another system is prohibited.**

2. FEATURES



Flexible Piping Layout
The drain and refrigerant pipes are located in different corner, allowing greater working space.

Decorated panel
Maintenance can be done from below by removing of panel only

Auto Swing Louvre
(Wide Air Flow)

2.1. Variety of excellent features

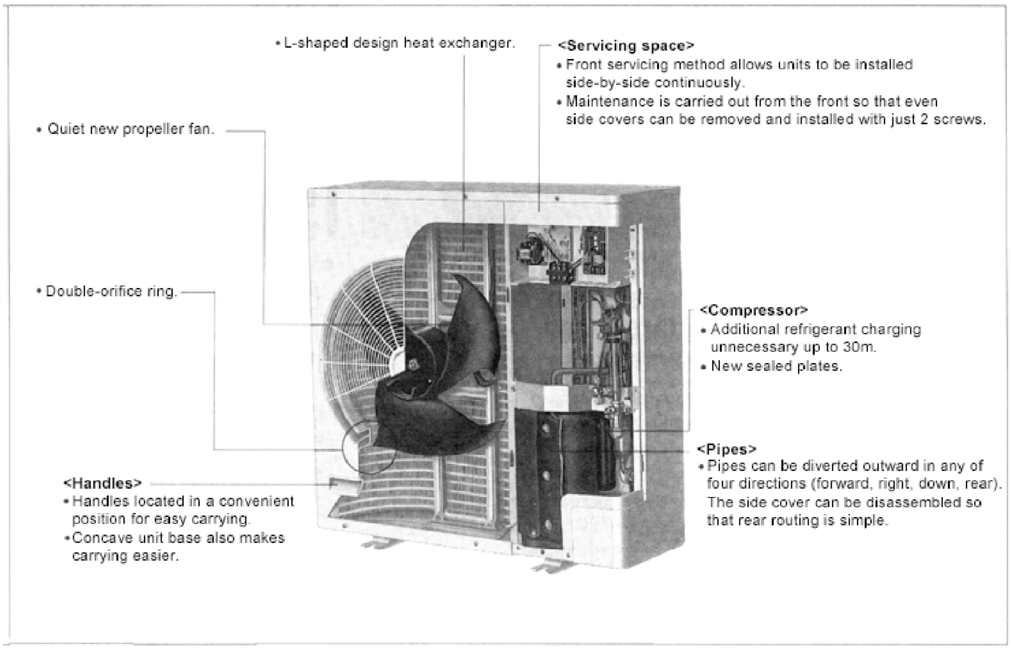
- **Compact design / Compact design 240 mm height, 840 mm width and 840 mm depth. (3 HP unit body)**
- **Automatic restart function / When the electric power resumes after a power failure, the unit will automatically restarts the operation in the pre-failure mode.**
- **Auto fan mode (indoor unit) / Auto fan mode is added besides HI, ME and LO. / It automatically adjusts the fan speed according to the indoor temperature.**
- **Dry mode function / Dry mode can make a comfortable indoor environment during wet season.**
- **Quiet operation / The sound level is 41dB (A) for 28BB model during High Fan speed and suitable for offices, shops, homes etc, when quiet operation is essential.**
- **Auto Swing Louvre / The air flow angle can be changed automatically (or manually) to an angle between 10° to 70° using the remote control.**
- **Low ambient cooling operation / Cooling operation is possible at outdoor temperature of / -5°C.**
- **Automatic changeover function (heat pump models) / The unit automatically switches between cooling and heating in**

accordance with operating load in order to maintain a comfortable indoor temperature.

- Hot start system (heat pump models)

- Pipes and drainage / Built-in upward draining mechanism.

2.2. Low-noise outdoor units



• L-shaped design heat exchanger.

<Servicing space>
• Front servicing method allows units to be installed side-by-side continuously.
• Maintenance is carried out from the front so that even side covers can be removed and installed with just 2 screws.

• Quiet new propeller fan.

• Double-orifice ring.

<Compressor>
• Additional refrigerant charging unnecessary up to 30m.
• New sealed plates.

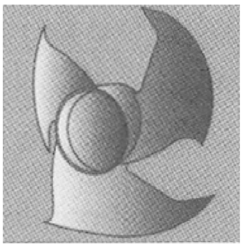
<Pipes>
• Pipes can be diverted outward in any of four directions (forward, right, down, rear). The side cover can be disassembled so that rear routing is simple.

<Handles>
• Handles located in a convenient position for easy carrying.
• Concave unit base also makes carrying easier.

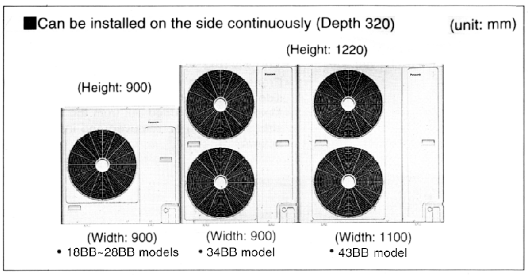
2.2.1. Product features

- Low-noise design improves comfort in surrounding areas

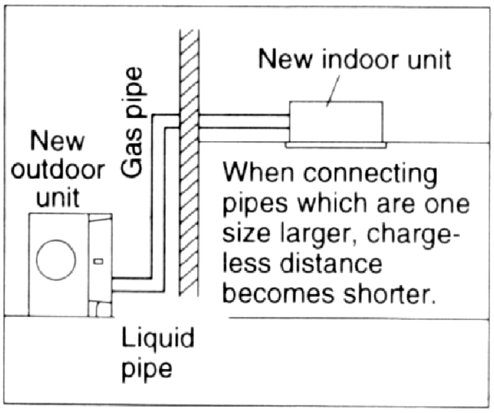
1. **The noise-suppressing winglet fan is a result of new research into vane design theory. The unique curved shape suppresses the generation of vortexes, thus reducing air flow noise.**
2. **The adoption of double-orifice rings reduces air passage resistance.**
3. **Strengthening of the noise insulation materials in the compressor and the sealing-in of mechanical noise allows vibration noise to be greatly enclosed and suppressed.**
4. **The heat exchanger has an L-shaped design to allow air to flow more smoothly.**
5. **Noise is automatically reduced further during night-time operation with lower outdoor air temperatures.**



2.3. Greatly improved workability increases system renewal capability

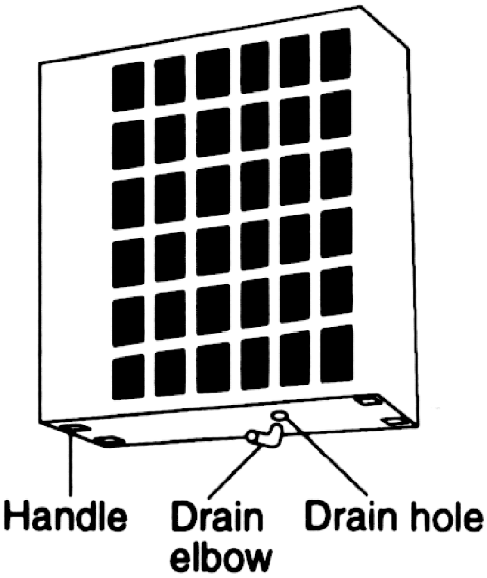

■Can be installed on the side continuously (Depth 320)
(unit: mm)
(Height: 1220)
(Height: 900)
(Width: 900)
• 18BB~28BB models
(Width: 900)
• 34BB model
(Width: 1100)
• 43BB model

- Pipes that are one size larger can also be connected for renewal.
- If renewing the system, existing refrigerant pipes can be utilized so that only the indoor and outdoor units need to be replaced.
- For example, liquid and gas pipes from 10 years ago can be connected to current pipes with the same size or one size larger. Effective utilization of materials reduces working time and trouble. (Adaptor sockets are not supplied.)

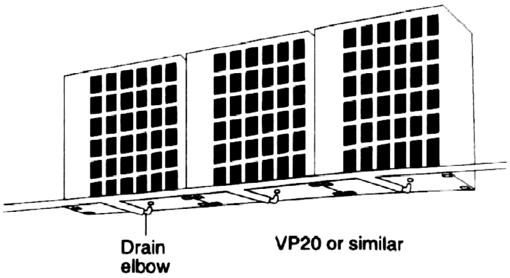

New indoor unit
Gas pipe
New outdoor unit
When connecting pipes which are one size larger, charge-less distance becomes shorter.
Liquid pipe

- Additional refrigerant charging unnecessary for 30 m
- All models do not require any additional charging of refrigerant for 30 m of pipe length. This makes installation much easier.
- Drain water dripping-prevention structure
- The base of the outdoor unit is provided with a single drain hole in order to prevent drain water from leaking out of the unit. By

connecting a drain elbow and a discharge pipe, water leakages can be prevented even when the unit is installed to a wall.

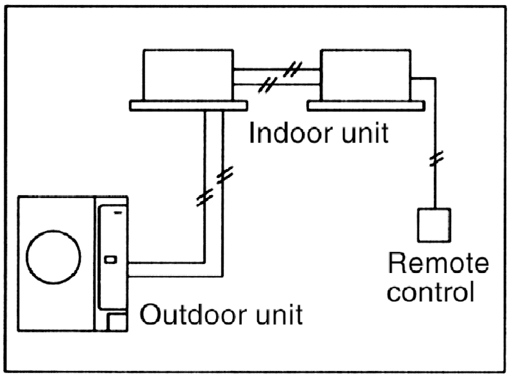


- **Save space design allows units to be installed side-by-side continuously**
- **Servicing after installation can be carried out by removing the front covers.**
- **Long pipe design for refrigerant pipes**
- **Maximum piping length of 50m for all models.**
- **Internal pipe connection**
- **Pipes are connected inside the units (inside the side covers), making the final appearance more attractive.**
- **Pipes can be diverted outward in any of four directions (forward, right, down, rear).**
- **Small liquid pipe diameters of 9.52mm for 43BB and 50BB models, making installation work much easier.**
- **Centralized draining method**
- **Even when multiple outdoor units are installed to a wall, the drain outlets can be concentrated into a single drain pipe. This makes installation easier and also improves appearance.**



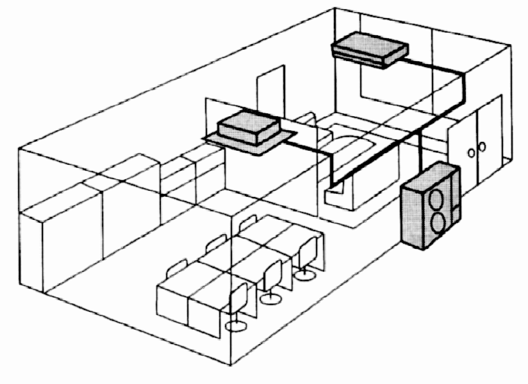
2.4. A brand-new control method using the latest in technology

- Easier power supply wiring connection / Power supply wiring and other wiring tasks can be carried out more easily.
- Twin non-polar wires used to connect indoor and outdoor units.
- Adoption of connection error prevention circuits for drive wires and signal wires. If a connection error is made, the relay does not operate and current does not flow to the circuit boards.

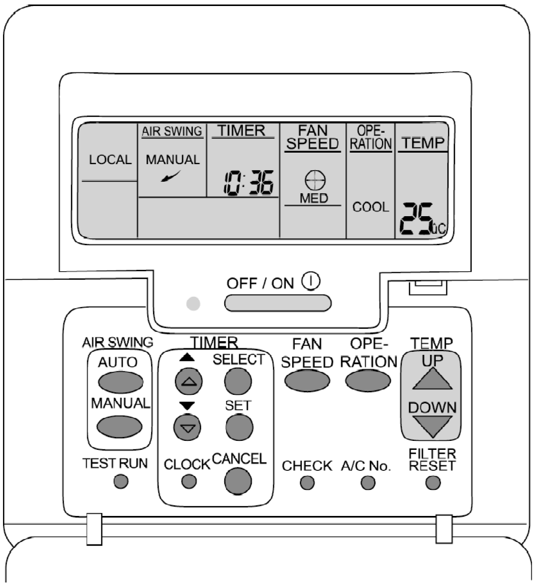


- Twin and Triple operation
- Simultaneous air conditioning of wide spaces and corners is possible. Indoor units of different horsepowers can even be used in combination.
- Master unit and slave-units can be set automatically in twin and triple systems. No address setting is necessary.
- Multiple indoor units can be operated simultaneously with a single remote control. Note that individual operation is not possible.
- Separate indoor/outdoor unit power supplies / The power supply can be connected to (1) just the outdoor units, or (2) to both the indoor and outdoor units.
- Easy test operation / Test operation can be carried out for both indoor and outdoor units.
- Automatic setting initialization function (Remote control and Indoor unit) / In accordance with the indoor and outdoor units

connected and the connection methods, conditions such as the connection configuration (twin or triple format) and remote control functions such as automatic louvre operation and cooling or heating mode are automatically detected and set instantly.

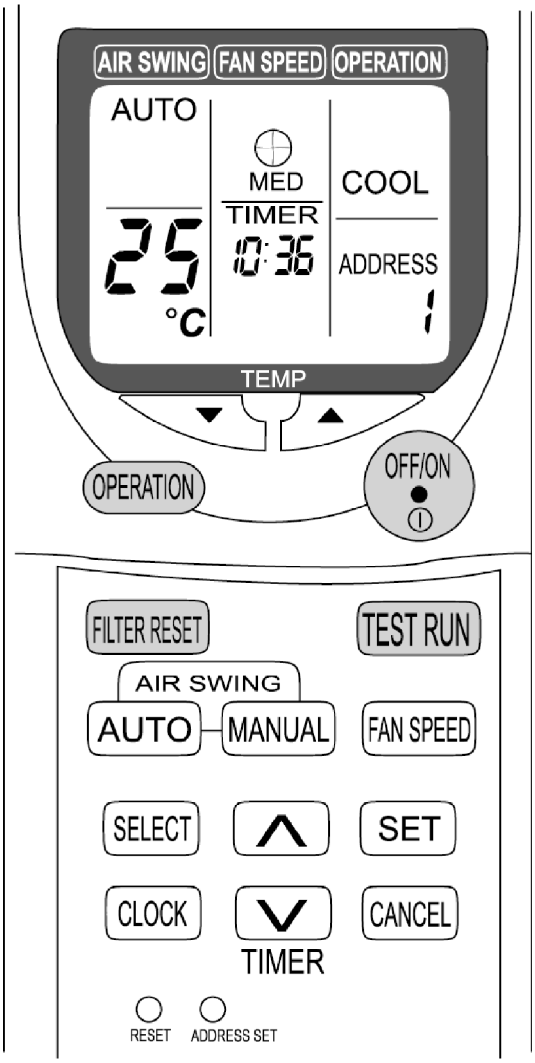


2.5. Wired Remote Control


LOCAL
AIR SWING
MANUAL
TIMER
0:36
FAN SPEED
MED
OPE-RATION
COOL
TEMP
25°C
OFF / ON
AIR SWING
AUTO
MANUAL
TIMER
SELECT
SET
FAN SPEED
OPE-RATION
TEMP
UP
DOWN
TEST RUN
CLOCK
CANCEL
CHECK
A/C No.
FILTER RESET

- The new design includes an easily-visible red pilot lamp. The power can be turned on and off at a single touch, without opening the cover.
- Has a built-in thermistor, allowing indoor temperature detection in accordance with indoor conditions by switching with main unit thermistor.
- Twin non-polar wires make installation work easy. (10 m cable supplied as accessory.)

2.6. Wireless Remote Control


AIR SWING
FAN SPEED
OPERATION
AUTO
MED
COOL
TIMER
25 °C
10:36
ADDRESS
1
TEMP
OPERATION
OFF/ON
FILTER RESET
TEST RUN
AIR SWING
AUTO
MANUAL
FAN SPEED
SELECT
SET
CLOCK
CANCEL
TIMER
RESET
ADDRESS SET

- **New design with compact size. (Operation range within approximately 8 m.)**
- **Built-in timer with ON/OFF timer setting (within 24 hours)**

	Wired	Wireless
Heat Pump	**CZ-RD51P**	**CZ-RL51P**
Cooling	**CZ-RD51P**	**CZ-RL01P**

NOTE: Both of the above remote control is packed separately from the indoor unit.

2.7. Group Control Equipment

3. SPECIFICATION (HEAT PUMP TYPE)

3.1. CS-W18BB4P / CU-W18BBP5

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W18BB4P	CU-W18B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	5.00	
			BTU/h	17,100	
Heating Capacity			kW	5.60	
			BTU/h	19,100	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m3/min	14	
			cfm	494	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900 x
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/1 6 x 35-7/16
Net Weight			kg	26	73
			lbs	57	161
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 12.7 (1/2) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R

	Starting Method			-	Direct on-line s
	Motor	Type		-	2-pole single induction m
		Rated Output	kW	-	1.3
Fan	Type, Number of Set			Turbo fan	Propeller f
	Motor	Type		6-pole single phase induction motor	6-pole single induction m
		Rated Output	kW	0.03	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fin
Refrigerant Control			Cool	Capillary tube	-
			Heat	-	Capillary tu
Refrigerant Oil (Charged)			litre	-	MEL56 (0
Refrigerant (Charged)			kg	-	R407C (2.
			(oz)		(99)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal therr fan motor, Crankcase heater, High and heating switch, Current transformer	
Noise Level			dB (A)	Hi 36 Lo 31	Cooling 50, He
			Power level dB	Cooling : Hi 51 Lo 46 Heating : Hi 51 Lo 46	Cooling 63, He

1. **Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)**

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W18BB4P, CU-W18BBP5		
			Condition by JIS B 8615		
Volts	V		220	230	240
Phase			Single	Single	Sing
Power Consumption	kW	Cool	1.82	1.82	1.82
		Heat	1.88	1.88	1.88
Running Current	A	Cool	8.40	8.00	7.70
		Heat	8.60	8.30	7.90
Starting Current	A		38	40	42
Power Factor	%	Cool	98	99	98
		Heat	99	98	99
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 1~220V, 230V, 240V 50H	

3.2. CS-W24BB4P / CU-W24BBP5

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W24BB4P	CU-W24BB
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	6.3	
			BTU/h	21,500	
Heating Capacity			kW	7.1	
			BTU/h	24,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	16	
			cfm	565	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900 x
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/1 6 x 35-7/16
Net Weight			kg	26	81
			lbs	57	179
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20 x
Compressor	Type, Number of Set			-	Hermetic-1 (Ro
	Starting Method			-	Direct on-line s
	Motor	Type		-	2-pole single p induction m
		Rated Output	kW	-	1.9
Fan	Type, Number of Set			Turbo fan	Propeller f
	Motor	Type		6-pole single phase induction motor	6-pole single p induction m
		Rated Output	kW	0.03	0.05

Air-heat Exchanger			**Slit-fin type**	**X-Louvre-fin**
Refrigerant Control		**Cool**	**Capillary tube**	**-**
		Heat	**-**	**Capillary tu**
Refrigerant Oil (Charged)		**litre**	**-**	**MEL56 (1.**
Refrigerant (Charged)		**kg**	**-**	**R407C (2.**
		(oz)		**(99)**
Running Adjustment	**Control Switch**		**Wireless or Wired Remote Control**	**-**
	Room Temperature		**Thermostat (Main Body)**	**-**
Safety Devices			**Internal protector for compressor, Internal ther fan motor, Crankcase heater, High and heating switch, Current transformer**	
Noise Level		**dB (A)**	**Hi 39 Lo 35**	**Cooling 52, He**
		Power level dB	**Cooling : Hi 54 Lo 50** **Heating : Hi 54 Lo 50**	**Cooling 65, He**

1. **Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)**

ELECTRICAL DATA (50Hz)

ITEM / MODEL			**CS-W24BB4P, CU-W24BBP5**		
			Condition by JIS B 8615		
Volts	**V**		**220**	**230**	**240**
Phase			**Single**	**Single**	**Sing**
Power Consumption	**kW**	**Cool**	**2.56**	**2.56**	**2.5**
		Heat	**2.60**	**2.60**	**2.6**
Running Current	**A**	**Cool**	**11.70**	**11.20**	**10.8**
		Heat	**11.90**	**11.40**	**10.9**
Starting Current	**A**		**64**	**66**	**68**
Power Factor	**%**	**Cool**	**99**	**99**	**99**
		Heat	**99**	**99**	**99**
***Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.**					
Panasonic	**Power source**			**AC, 1~220V, 230V, 240V 50H**	

3.3. CS-W28BB4P / CU-W28BBP5

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W28BB4P	CU-W28B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	7.1	
			BTU/h	24,200	
Heating Capacity			kW	8.0	
			BTU/h	27,300	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m3/min	18	
			cfm	636	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	82
			lbs	57	181
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole single induction
		Rated Output	kW	-	2.0
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.04	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fi
Refrigerant Control			Cool	Capillary tube	-
			Heat	-	Capillary t
Refrigerant Oil (Charged)			litre	-	MEL56 (1
Refrigerant (Charged)			kg	-	R407C (3
			(oz)		(116)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal ther fan motor, Crankcase heater, High and heating switch, Current transformer	
Noise Level			dB (A)	Hi 40 Lo 36	Cooling 53, He
			Power level dB	Cooling : Hi 55 Lo 51 Heating : Hi 55 Lo 51	Cooling 66, He

1. **Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)**

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W28BB4P, CU-W28BBP5		
			Condition by JIS B 8615		
Volts	V		220	230	240
Phase			Single	Single	Sing
Power Consumption	kW	Cool	2.86	2.86	2.8
		Heat	3.02	3.02	3.0
Running Current	A	Cool	13.1	12.5	12.
		Heat	13.8	13.2	12.
Starting Current	A		68	70	72
Power Factor	%	Cool	99	99	99
		Heat	99	99	99
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 1~220V, 230V, 240V 50H		

3.4. CS-W28BB4P / CU-W28BBP8

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W28BB4P	CU-W28B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	7.1	
			BTU/h	24,200	
Heating Capacity			kW	8.0	
			BTU/h	27,300	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m3/min	18	
			cfm	636	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/1 6 x 35-7/1
Net Weight			kg	26	82
			lbs	57	181
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20

Compressor	**Type, Number of Set**			**-**	**Hermetic-1 (R**
	Starting Method			**-**	**Direct on-line**
	Motor	**Type**		**-**	**2-pole 3-phase i motor**
		Rated Output	**kW**	**-**	**2.0**
Fan	**Type, Number of Set**			**Turbo fan**	**Propeller**
	Motor	**Type**		**6-pole single phase induction motor**	**6-pole single induction**
		Rated Output	**kW**	**0.04**	**0.05**
Air-heat Exchanger				**Slit-fin type**	**X-Louvre-fi**
Refrigerant Control			**Cool**	**Capillary tube**	**-**
			Heat	**-**	**Capillary t**
Refrigerant Oil (Charged)			**litre**	**-**	**MEL56 (1**
Refrigerant (Charged)			**kg**	**-**	**R407C (3**
			(oz)		**(116)**
Running Adjustment	**Control Switch**			**Wireless or Wired Remote Control**	**-**
	Room Temperature			**Thermostat (Main Body)**	**-**
Safety Devices				**Heat thermostat for compressor, Internal ther fan motor, Crankcase heater, High and heating switch, Current transformer**	
Noise Level			**dB (A)**	**Hi 40 Lo 36**	**Cooling 53, He**
			Power level dB	**Cooling : Hi 55 Lo 51** **Heating : Hi 55 Lo 51**	**Cooling 66, He**

1. **Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)**

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W28BB4P, CU-W28BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.72	2.72	2.7
		Heat	2.86	2.86	2.8
Running Current	A	Cool	4.30	4.30	4.3
		Heat	4.50	4.50	4.5
Starting Current	A		28	29	30
Power Factor	%	Cool	96	91	88
		Heat	97	92	88
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 3N~380V, 400V, 415V 50	

3.5. CS-W34BB4P / CU-W34BBP8

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W34BB4P	CU-W34B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	10.0	
			BTU/h	34,100	
Heating Capacity			kW	11.2	
			BTU/h	38,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m3/min	23	
			cfm	812	
Outside Dimension (H x W x D)			mm	290 x 840 x 840	1220 x 900
			inch	11-7/16 x 33-1/24 x 33-1/24	48-7/24 x 35-7/16
Net Weight			kg	30	97
			lbs	66	214
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase motor
		Rated Output	kW	-	3.0
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.08	0.05 x

Air-heat Exchanger			Slit-fin type	X-Louvre-fi
Refrigerant Control		Cool	Capillary tube	-
		Heat	-	Capillary t
Refrigerant Oil (Charged)		litre	-	MMMAPOE
Refrigerant (Charged)		kg	-	R407C (3
		(oz)		(113)
Running Adjustment	Control Switch		Wireless or Wired Remote Control	-
	Room Temperature		Thermostat (Main Body)	-
Safety Devices			Internal protector for compressor, Internal ther fan motor, Crankcase heater, High and heating switch, Current transformer	
Noise Level		dB (A)	Hi 45 Lo 41	Cooling 56, He
		Power level dB	Cooling : Hi 60 Lo 56 Heating : Hi 60 Lo 56	Cooling 69, He

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)
2. Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W34BB4P, CU-W34BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	3.88	3.88	3.88
		Heat	4.07	4.07	4.07
Running Current	A	Cool	6.2	6.2	6.2
		Heat	6.5	6.5	6.5
Starting Current	A		39	41	42
Power Factor	%	Cool	95	90	87
		Heat	95	90	87
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50H		

3.6. CS-W43BB4P / CU-W43BBP8

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W43BB4P	CU-W43B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL51P (Wireless)	
Cooling Capacity			kW	12.5	
			BTU/h	42,600	
Heating Capacity			kW	14.0	
			BTU/h	47,700	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	30	
			cfm	1059	
Outside Dimension (H x W x D)			mm	290 x 840 x 840	1220 x 1100
			inch	11-7/16 x 33-1/24 x 33-1/24	48-7/24 x 35-7/16
Net Weight			kg	33	114
			lbs	73	251
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 32	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase motor
		Rated Output	kW	-	3.75
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.12	0.055 x
Air-heat Exchanger				Slit-fin type	X-Louvre-fi
Refrigerant Control			Cool	Capillary tube	-
			Heat	-	Capillary
Refrigerant Oil (Charged)			litre	-	MMMP
Refrigerant (Charged)			kg	-	R407C (
			(oz)		(127)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal ther fan motor, Crankcase heater, High and heating switch, Current transformer	
Noise Level			dB (A)	Hi 49 Lo 45	Cooling 56, He
			Power level dB	Cooling : Hi 64 Lo 60 Heating : Hi 64 Lo 60	Cooling 69, He

1. **Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)**
2. **Heating capacities are based on indoor temperature of 20°C D.B. (68°F D.B.) and outdoor air temperature of 7°C D.B. (44.6°F D.B.), 6°C W.B. (42.8°F W.B.)**

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W43BB4P, CU-W43BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	4.49	4.49	4.49
		Heat	4.66	4.66	4.66
Running Current	A	Cool	7.8	7.8	7.8
		Heat	8.0	8.0	8.0
Starting Current	A		58	58	58
Power Factor	%	Cool	87	83	80
		Heat	89	84	81
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 3N~380V, 400V, 415V 50H	

4. SPECIFICATION (COOLING ONLY TYPE)

4.1. CS-W18BB4P / CU-V18BBP5

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W18BB4P	CU-V18B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	5.0	
			BTU/h	17,100	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	14	
			cfm	494	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900 x
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	72
			lbs	57	159
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 12.7 (1/2) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole single induction m
		Rated Output	kW	-	1.3
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		4-pole single phase induction motor	6-pole single induction m
		Rated Output	kW	0.03	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fin
Refrigerant Control				Capillary tube	-
Refrigerant Oil (Charged)			litre	-	MEL56 (0
Refrigerant (Charged)			kg	-	R407C (2.
			(oz)		(99)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal ther fan motor, Crankcase heater, High pressure Current transformer	
Noise Level			dB (A)	Hi 36 Lo 31	50
			Power level dB	Hi 51 Lo 46	63

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W18BB4P, CU-V18BBP5		
			Condition by JIS B 8615		
Volts	V		220	230	240
Phase			Single	Single	Sing
Power Consumption	kW	Cool	1.82	1.82	1.8
Running Current	A	Cool	8.40	8.00	7.7
Starting Current	A		38	40	42
Power Factor	%	Cool	98	99	98
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 1~220V, 230V, 240V 50H	

4.2. CS-W24BB4P / CU-V24BBP5

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W24BB4P	CU-V24B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	6.3	
			BTU/h	21,500	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	16	
			cfm	565	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	80
			lbs	57	176
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole single induction
		Rated Output	kW	-	1.9
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		4-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.03	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fi
Refrigerant Control				Capillary tube	-
Refrigerant Oil (Charged)			litre	-	MEL56 (

Refrigerant (Charged)		kg	-	R407C (2
		(oz)		(99)
Running Adjustment	Control Switch		Wireless or Wired Remote Control	-
	Room Temperature		Thermostat (Main Body)	-
Safety Devices			Internal protector for compressor, Internal ther fan motor, Crankcase heater, High pressure Current transformer	
Noise Level		dB (A)	Hi 39 Lo 35	52
		Power level dB	Hi 54 Lo 50	65

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W24BB4P, CU-V24BBP5		
			Condition by JIS B 8615		
Volts	V		220	230	240
Phase			Single	Single	Sing
Power Consumption	kW	Cool	2.56	2.56	2.5
Running Current	A	Cool	11.70	11.20	10.8
Starting Current	A		64	66	68
Power Factor	%	Cool	99	99	99
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 1~220V, 230V, 240V 50H	

4.3. CS-W24BB4P / CU-V24BBP8

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W24BB4P	CU-V24B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	6.3	
			BTU/h	21,500	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	16	
			cfm	565	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	90
			lbs	57	198
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 6.35 (1/4) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase i motor
		Rated Output	kW	-	1.9
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		4-pole single phase induction motor	6-pole single induction m
		Rated Output	kW	0.03	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fi
Refrigerant Control				Capillary tube	Capillary t
Refrigerant Oil (Charged)			litre	-	MEL56 (1
Refrigerant (Charged)			kg	-	R407C (2
			(oz)		(99)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal ther fan motor, Crankcase heater, High pressure Current transformer	
Noise Level			dB (A)	Hi 39 Lo 35	52
			Power level dB	Hi 54 Lo 50	65

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air

temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W24BB4P, CU-V24BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.37	2.37	2.37
Running Current	A	Cool	3.95	3.95	3.95
Starting Current	A		27	28	29
Power Factor	%	Cool	91	87	83
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source		AC, 3N~380V, 400V, 415V 50		

4.4. CS-W28BB4P / CU-V28BBP5

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W28BB4P	CU-V28B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	7.1	
			BTU/h	24,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m3/min	18	
			cfm	636	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900 x
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	81
			lbs	57	179
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole single induction
		Rated Output	kW	-	2.0
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.04	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fi

Refrigerant Control			**Capillary tube**	**Capillary t**
Refrigerant Oil (Charged)		**litre**	**-**	**MEL56 (1**
Refrigerant (Charged)		**kg**	**-**	**R407C (3**
		(oz)		**(116)**
Running Adjustment	**Control Switch**		**Wireless or Wired Remote Control**	**-**
	Room Temperature		**Thermostat (Main Body)**	**-**
Safety Devices			**Internal protector for compressor, Internal ther fan motor, Crankcase heater, High pressure Current transformer**	
Noise Level		**dB (A)**	**Hi 40 Lo 36**	**53**
		Power level dB	**Hi 55 Lo 51**	**66**

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.), and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			**CS-W28BB4P, CU-V28BBP5**		
			Condition by JIS B 8615		
Volts	**V**		**220**	**230**	**24**
Phase			**Single**	**Single**	**Sing**
Power Consumption	**kW**	**Cool**	**2.86**	**2.86**	**2.8**
Running Current	**A**	**Cool**	**13.1**	**12.5**	**12.**
Starting Current	**A**		**68**	**70**	**72**
Power Factor	**%**	**Cool**	**99**	**99**	**99**
***Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.**					
Panasonic	**Power source**			**AC, 1~220V, 230V, 240V 50H**	

4.5. CS-W28BB4P / CU-V28BBP8

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W28BB4P	CU-V28BB
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	7.1	
			BTU/h	24,200	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	18	
			cfm	636	
Outside Dimension (H x W x D)			mm	240 x 840 x 840	900 x 900 x
			inch	9-7/16 x 33-1/24 x 33-1/24	35-7/16 x 35-7/16
Net Weight			kg	26	81
			lbs	57	179
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 15.88 (5/8) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20 x
Compressor	Type, Number of Set			-	Hermetic-1 (R
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase i motor
		Rated Output	kW	-	2.0
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction m
		Rated Output	kW	0.04	0.05
Air-heat Exchanger				Slit-fin type	X-Louvre-fin
Refrigerant Control				Capillary tube	Capillary t
Refrigerant Oil (Charged)			litre	-	MEL56 (1.
Refrigerant (Charged)			kg	-	R407C (3.
			(oz)		(116)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Heat thermostat for compressor, Internal therm fan motor, Crankcase heater, High pressure Current transformer	
Noise Level			dB (A)	Hi 40 Lo 36	53
			Power level dB	Hi 55 Lo 51	66

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.), and outdoor air

temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W28BB4P, CU-V28BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	2.72	2.72	2.7
Running Current	A	Cool	4.30	4.30	4.3
Starting Current	A		28	29	30
Power Factor	%	Cool	96	91	88
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 3N~380V, 400V, 415V 50	

4.6. CS-W34BB4P / CU-V34BBP8

ITEM / MODEL				Indoor Unit	Outdoor
			Main Body	CS-W34BB4P	CU-V34B
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	10.0	
			BTU/h	34,100	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	23	
			cfm	812	
Outside Dimension (H x W x D)			mm	290 x 840 x 840	1220 x 900
			inch	11-7/16 x 33-1/24 x 33-1/24	48-1/24 x 35-7/1
Net Weight			kg	30	95
			lbs	66	209
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase moto
		Rated Output	kW	-	2.8
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction
		Rated Output	kW	0.08	0.05 x
Air-heat Exchanger				Slit-fin type	X-Louvre-fi

Refrigerant Control			Capillary tube	Capillary
Refrigerant Oil (Charged)		litre	-	MMMAPO
Refrigerant (Charged)		kg	-	R407C (
		(oz)		(113)
Running Adjustment	Control Switch		Wireless or Wired Remote Control	-
	Room Temperature		Thermostat (Main Body)	-
Safety Devices			Internal protector for compressor, Internal th for fan motor, Crankcase heater, High pressu Current transformer	
Noise Level		dB (A)	Hi 45 Lo 41	56
		Power level dB	Hi 60 Lo 56	69

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W34BB4P, CU-V34BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	41
Phase			3N	3N	3N
Power Consumption	kW	Cool	3.88	3.88	3.8
Running Current	A	Cool	6.2	6.2	6.2
Starting Current	A		39	41	42
Power Factor	%	Cool	95	90	87
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 3N~380V, 400V, 415V 50	

4.7. CS-W43BB4P / CU-V43BBP8

ITEM / MODEL				Indoor Unit	Outdoor u
			Main Body	CS-W43BB4P	CU-V43BE
			Panel	CZ-BT01P	
			Remote Control	CZ-RD51P (Wired) CZ-RL01P (Wireless)	
Cooling Capacity			kW	12.5	
			BTU/h	42,600	
Refrigerant Charge-less			m	30	
Standard Air Volume for High Speed			m^3/min	30	
			cfm	1059	
Outside Dimension (H x W x D)			mm	290 x 840 x 840	1220 x 1100
			inch	11-7/16 x 33-1/24 x 33-1/24	48-1/24 x 43-5/16
Net Weight			kg	33	111
			lbs	73	245
Piping Connection	Refrigerant	Gas	mm (inch)	O.D Ø 19.05 (3/4) Flared Type	
		Liquid	mm (inch)	O.D Ø 9.52 (3/8) Flared Type	
	Drain		mm	O.D Ø 20	I.D Ø 20
Compressor	Type, Number of Set			-	Hermetic-1 (S
	Starting Method			-	Direct on-line
	Motor	Type		-	2-pole 3-phase i motor
		Rated Output	kW	-	3.75
Fan	Type, Number of Set			Turbo fan	Propeller
	Motor	Type		6-pole single phase induction motor	6-pole single induction m
		Rated Output	kW	0.12	0.055 x
Air-heat Exchanger				Slit-fin type	X-Louvre-fi
Refrigerant Control				Capillary tube	Capillary t
Refrigerant Oil (Charged)			litre	-	MMMAP
Refrigerant (Charged)			kg	-	R407C (3
			(oz)		(127)
Running Adjustment	Control Switch			Wireless or Wired Remote Control	-
	Room Temperature			Thermostat (Main Body)	-
Safety Devices				Internal protector for compressor, Internal th for fan motor, Crankcase heater, High pressu Current transformer	
Noise Level			dB (A)	Hi 49 Lo 45	56
			Power level dB	Hi 64 Lo 60	69

1. Cooling capacities are based on indoor temperature of 27°C D.B. (80.6°F D.B.), 19.0°C W.B. (66.2°F W.B.) and outdoor air temperature of 35°C D.B. (95°F D.B.), 24°C W.B. (75.2°F W.B.)

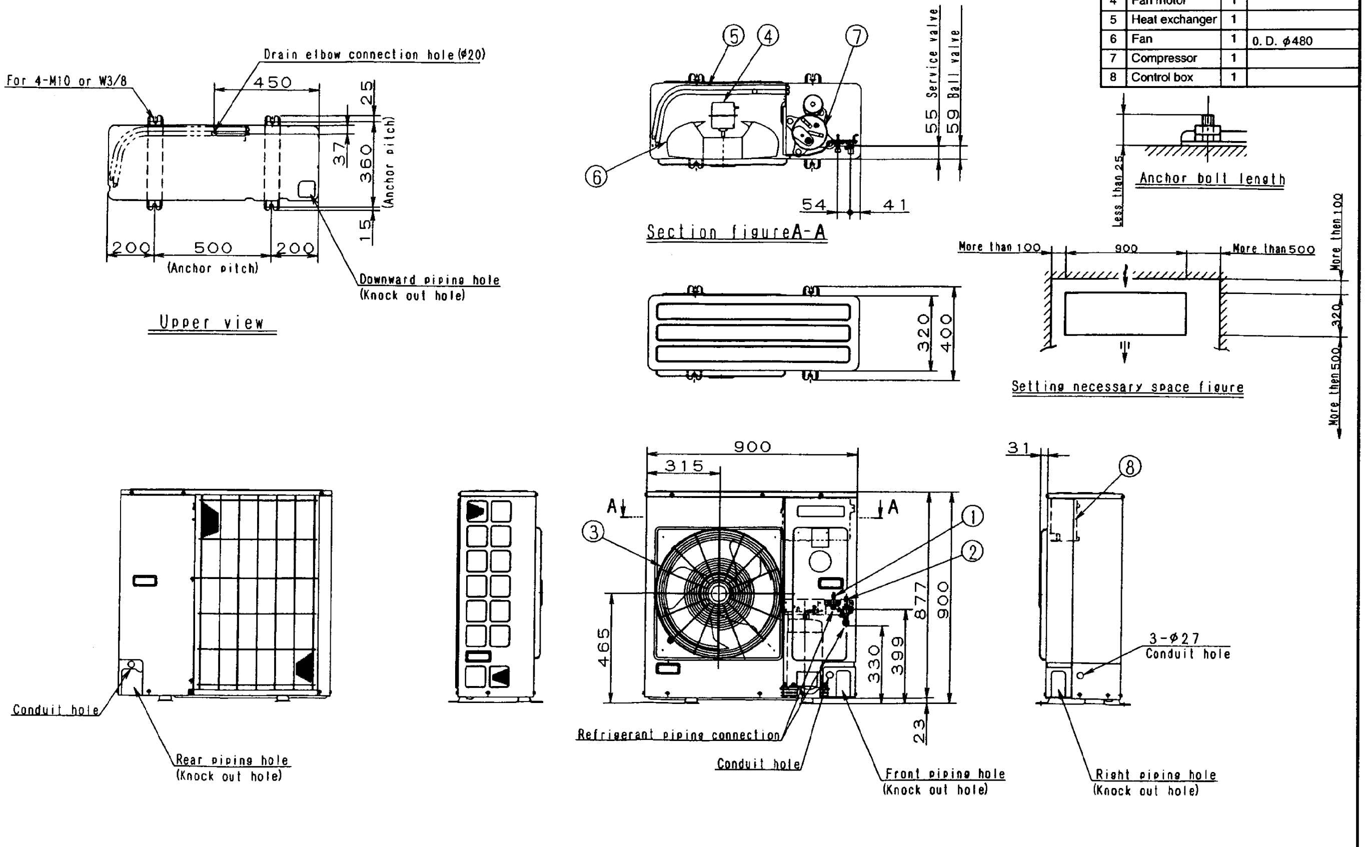
ELECTRICAL DATA (50Hz)

ITEM / MODEL			CS-W43BB4P, CU-V43BBP8		
			Condition by JIS B 8615		
Volts	V		380	400	415
Phase			3N	3N	3N
Power Consumption	kW	Cool	4.49	4.49	4.49
Running Current	A	Cool	7.8	7.8	7.8
Starting Current	A		58	58	58
Power Factor	%	Cool	87	83	80
*Power Factor means total figure of compressor, indoor fan motor and outdoor fan motor.					
Panasonic	Power source			AC, 3N~380V, 400V, 415V 50	

5. TECHNICAL DRAWING

CU-W18BBP5, CU-V18BBP5

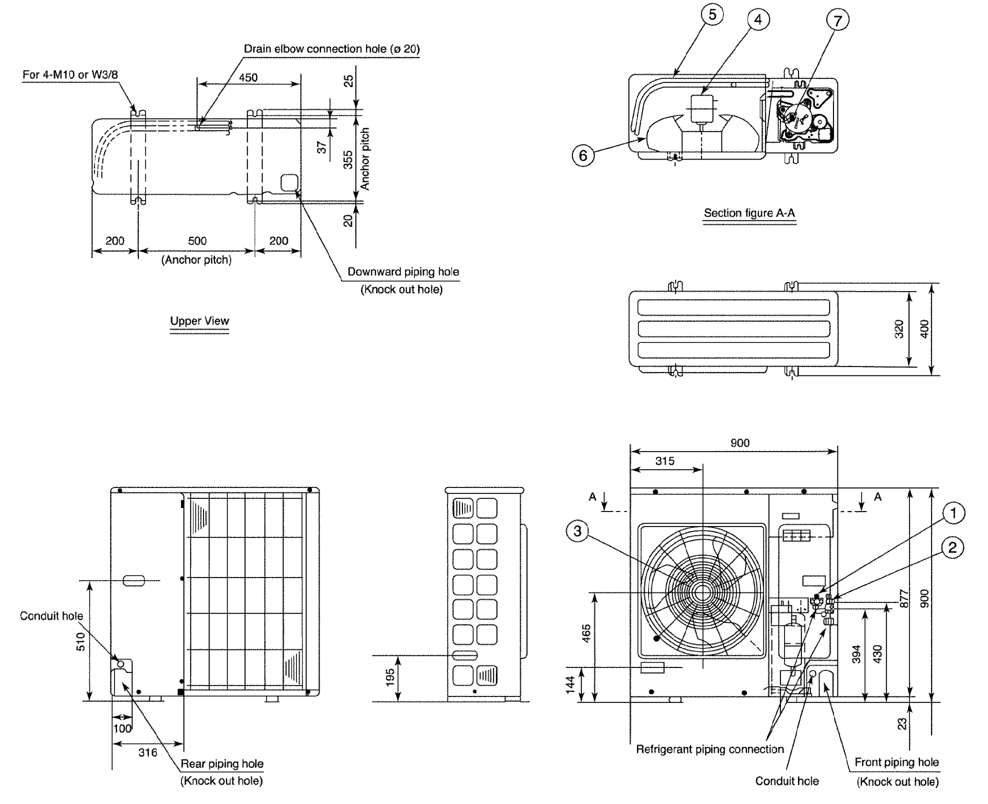
NO.	Description	PC	Dimension
1	Service valve	1	O. D. ϕ6.35 Flared
2	Ball valve	1	O. D. ϕ12.7 Flared
3	Fan guard	1	
4	Fan motor	1	
5	Heat exchanger	1	
6	Fan	1	O. D. ϕ480
7	Compressor	1	
8	Control box	1	

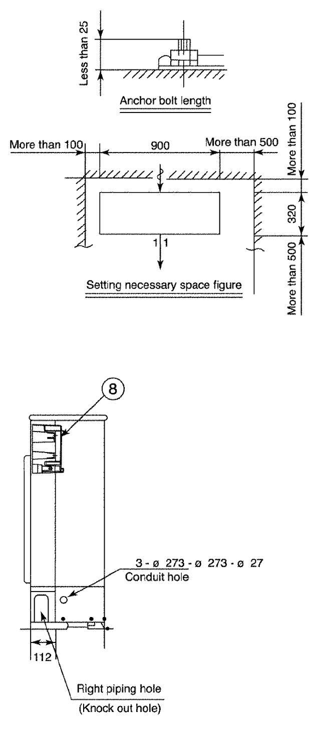

For 4-M10 or W3/8
Drain elbow connection hole (ϕ20)
450
25
37
360
(Anchor pitch)
15
200
500
(Anchor pitch)
200
Downward piping hole
(Knock out hole)
Upper view
⑤
④
⑦
⑥
55 Service valve
59 Ball valve
54
41
Section figureA-A
320
400
Less than 25
Anchor bolt length
More than 100
900
More than 500
More than 100
320
More than 500
Setting necessary space figure
900
315
A
A
③
①
②
465
877
900
330
399
23
31
⑧
3-ϕ27
Conduit hole
Conduit hole
Rear piping hole
(Knock out hole)
Refrigerant piping connection
Conduit hole
Front piping hole
(Knock out hole)
Right piping hole
(Knock out hole)

Unit : mm

CU-W24BBP5, CU-V24BBP5, CU-V24BBP8

No.	Description	PC	Dimension
1	Service valve	1	O.D ø 6.35 Flared
2	Ball valve	1	O.D. ø 15.88 Flared
3	Fan guard	1	
4	Fan motor	1	
5	Heat exchanger	1	
6	Fan	1	O.D. ø 480
7	Compressor	1	
8	Control box	1	

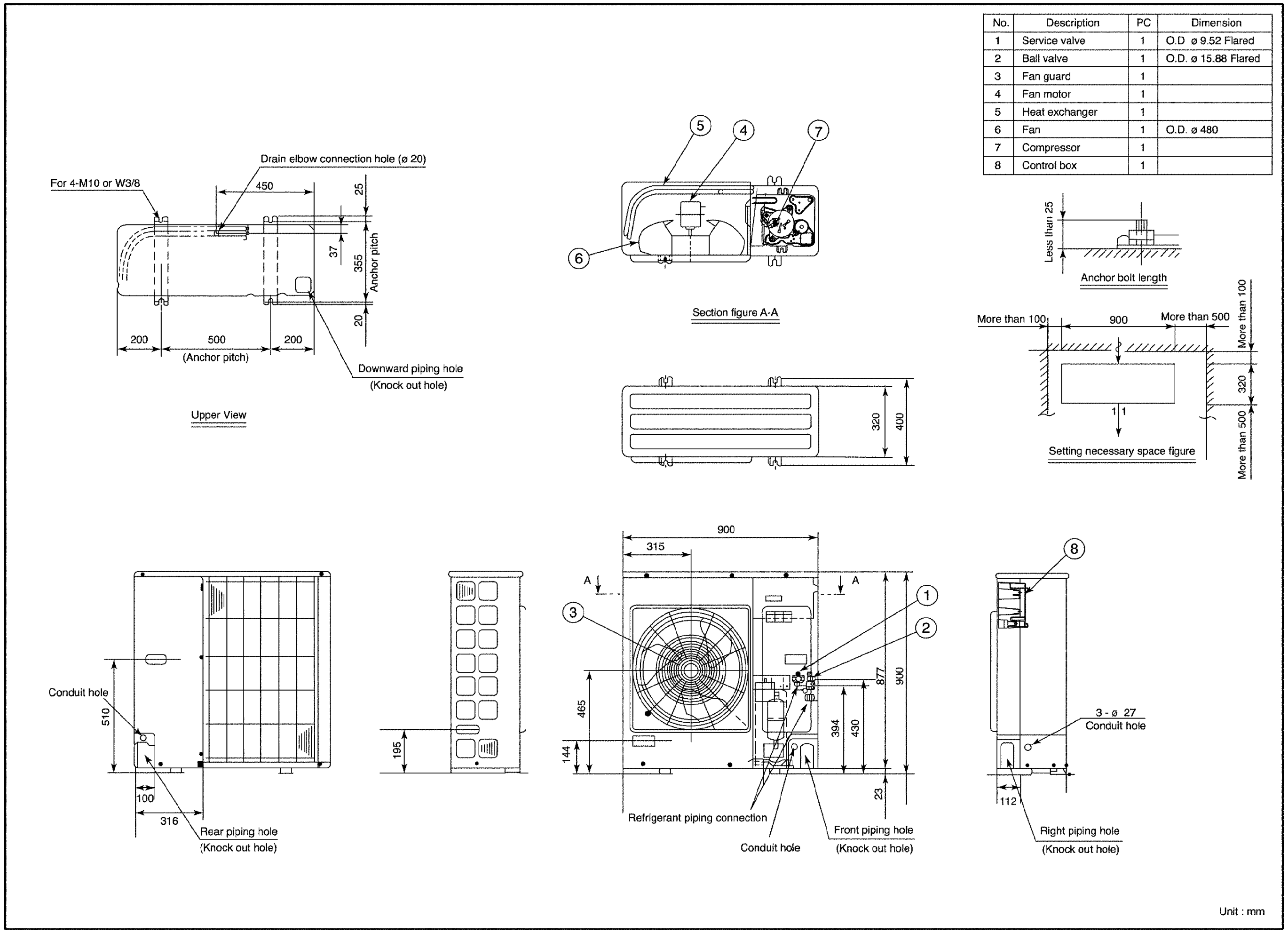

For 4-M10 or W3/8
Drain elbow connection hole (ø 20)
450
25
37
355
Anchor pitch
20
200
500
(Anchor pitch)
200
Downward piping hole
(Knock out hole)
Upper View
⑤
④
⑦
⑥
Section figure A-A
320
400
Conduit hole
510
100
316
Rear piping hole
(Knock out hole)
195
900
315
A
A
③
①
②
465
144
394
430
877
900
23
Refrigerant piping connection
Conduit hole
Front piping hole
(Knock out hole)


Less than 25
Anchor bolt length
More than 100
900
More than 500
More than 100
320
More than 500
Setting necessary space figure
⑧
3 - ø 273 - ø 273 - ø 27
Conduit hole
112
Right piping hole
(Knock out hole)

Unit : mm

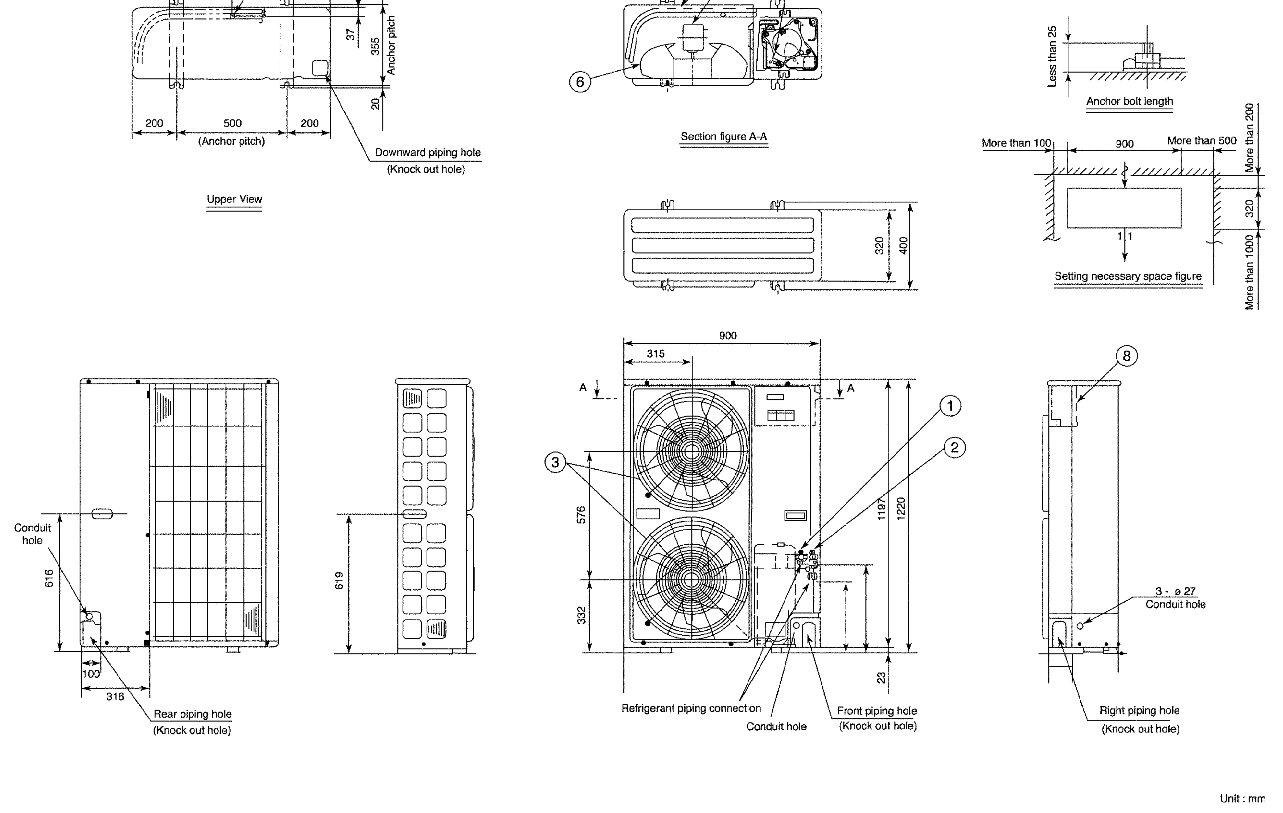
CU-W28BBP5, CU-W28BBP8, CU-V28BBP5, CU-V28BBP8

No.	Description	PC	Dimension
1	Service valve	1	O.D ø 9.52 Flared
2	Ball valve	1	O.D. ø 15.88 Flared
3	Fan guard	1	
4	Fan motor	1	
5	Heat exchanger	1	
6	Fan	1	O.D. ø 480
7	Compressor	1	
8	Control box	1	

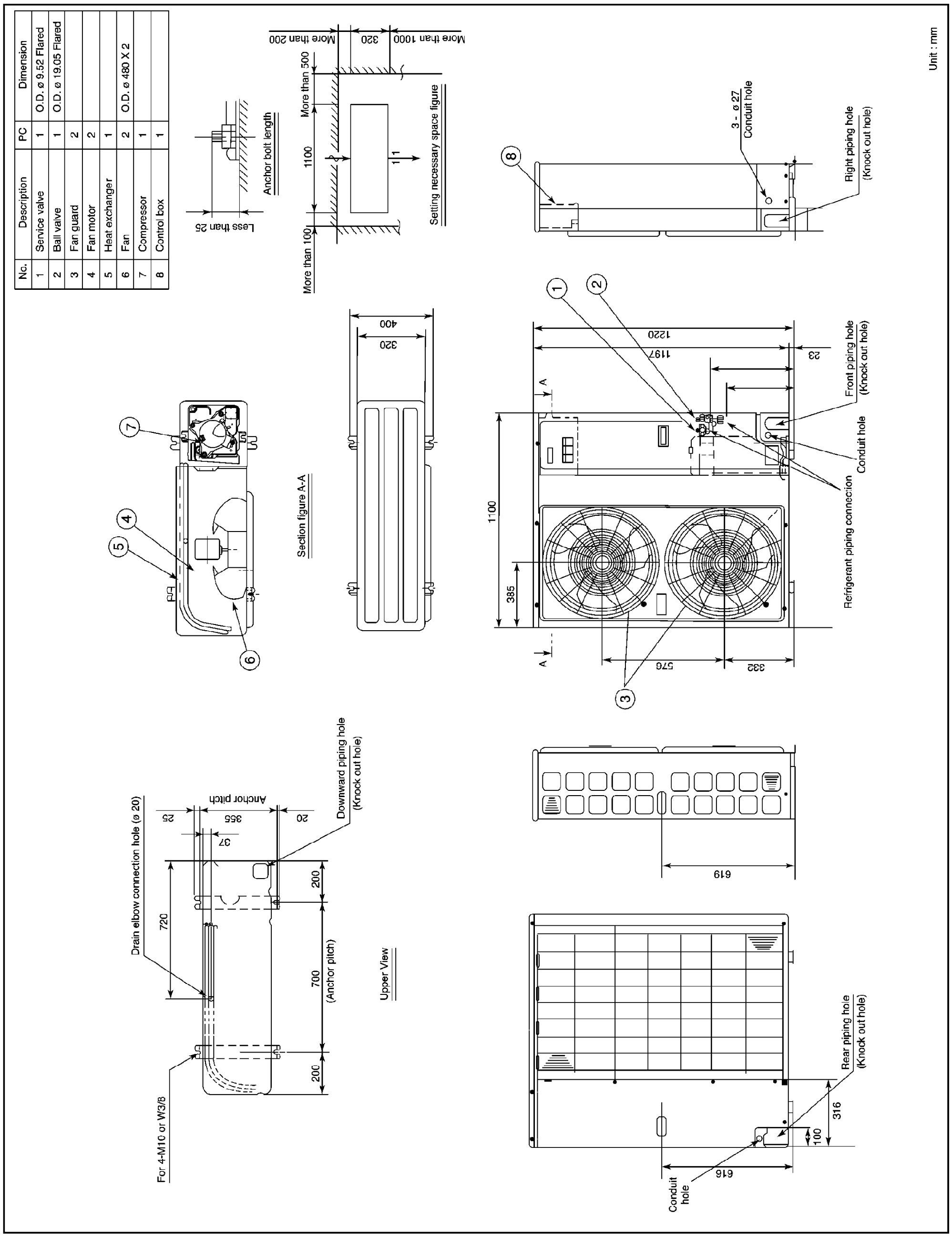

Drain elbow connection hole (ø 20)
For 4-M10 or W3/8
450
25
37
355
Anchor pitch
20
200
500
200
(Anchor pitch)
Downward piping hole
(Knock out hole)
Upper View
⑤
④
⑦
⑥
Section figure A-A
320
400
Less than 25
Anchor bolt length
More than 100
900
More than 500
More than 100
320
More than 500
Setting necessary space figure
900
315
A
A
③
①
②
465
144
394
430
877
900
23
Refrigerant piping connection
Conduit hole
Front piping hole
(Knock out hole)
Conduit hole
510
100
316
Rear piping hole
(Knock out hole)
195
⑧
3 - ø 27
Conduit hole
112
Right piping hole
(Knock out hole)
Unit : mm

CU-W34BBP8, CU-V34BBP8

No.	Description	PC	Dimension
1	Service valve	1	O.D. ø 9.52 Flared
2	Ball valve	1	O.D. ø 19.05 Flared
3	Fan guard	2	
4	Fan motor	2	
5	Heat exchanger	1	
6	Fan	2	O.D. ø 480 X 2
7	Compressor	1	
8	Control box	1	


For 4-M10 or W3/8
Drain elbow connection hole (ø 20)
450
25
37
355
Anchor pitch
20
200
500
(Anchor pitch)
200
Downward piping hole
(Knock out hole)
Upper View
⑤
④
⑦
⑥
Section figure A-A
320
400
Less than 25
Anchor bolt length
More than 100
900
More than 500
More than 200
320
More than 1000
Setting necessary space figure
900
315
A
A
③
①
②
576
332
1197
1220
23
Refrigerant piping connection
Conduit hole
Front piping hole
(Knock out hole)
Conduit hole
616
100
316
Rear piping hole
(Knock out hole)
619
⑧
3 - ø 27
Conduit hole
Right piping hole
(Knock out hole)
Unit : mm

CU-W43BBP8, CU-V43BBP8

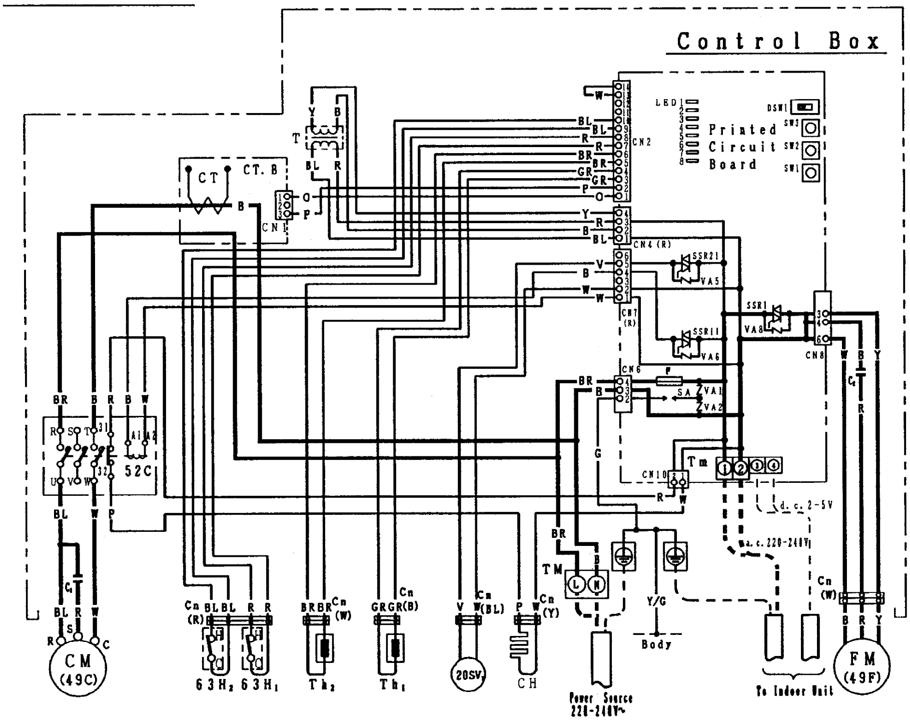


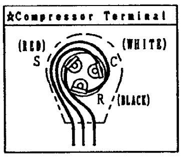
No.	Description	PC	Dimension
1	Service valve	1	O.D. ø 9.52 Flared
2	Ball valve	1	O.D. ø 19.05 Flared
3	Fan guard	2	
4	Fan motor	2	
5	Heat exchanger	1	
6	Fan	2	O.D. ø 480 X 2
7	Compressor	1	
8	Control box	1	

For 4-M10 or W3/8
Drain elbow connection hole (ø 20)
720
25
37
355
Anchor pitch
20
200
700
(Anchor pitch)
200
Downward piping hole
(Knock out hole)
Upper View
⑤
④
⑦
⑥
Section figure A-A
320
400
Less than 25
Anchor bolt length
More than 100
1100
More than 500
More than 200
320
More than 1000
Setting necessary space figure
Conduit
hole
616
100
316
Rear piping hole
(Knock out hole)
619
1100
385
A
A
③
570
332
①
②
1197
1220
23
Refrigerant piping connection
Conduit hole
Front piping hole
(Knock out hole)
⑧
3 - ø 27
Conduit hole
Right piping hole
(Knock out hole)
Unit : mm

6. CIRCUIT DIAGRAM

ELECTRIC CIRCUIT DIAGRAM


Control Box
LED 1 2 3 4 5 6 7 8
Printed Circuit Board
DSW1
SW3
SW2
SW1
CN2
CN4 (R)
CN7 (R)
CN6
CN8
CN10
CN1
CT
CT. B
T
Y B
BL R
SSR21
SSR1
SSR11
VA5
VA6
VA8
VA1
VA2
F
SA
Tm
① ② ③ ④
d. c. 2-5V
a. c. 220-240V
52C
BR B R B W
R S T
U V W
A1 A2
BL W P
C1
C2
BL R W
R S C
CM (49C)
Cn (R) BL BL R R
63H2 63H1
BR BR Cn (W)
Th2
GR GR Cn (B)
Th1
V W Cn (BL)
20SV
P W Cn (Y)
CH
TM
L N
BR B
Y/G
Body
Power Source 220-240V~
To Indoor Unit
Cn (W)
B R Y
FM (49F)
W B Y
G



☆Compressor Terminal

(RED)
S
(WHITE)
C
R
(BLACK)

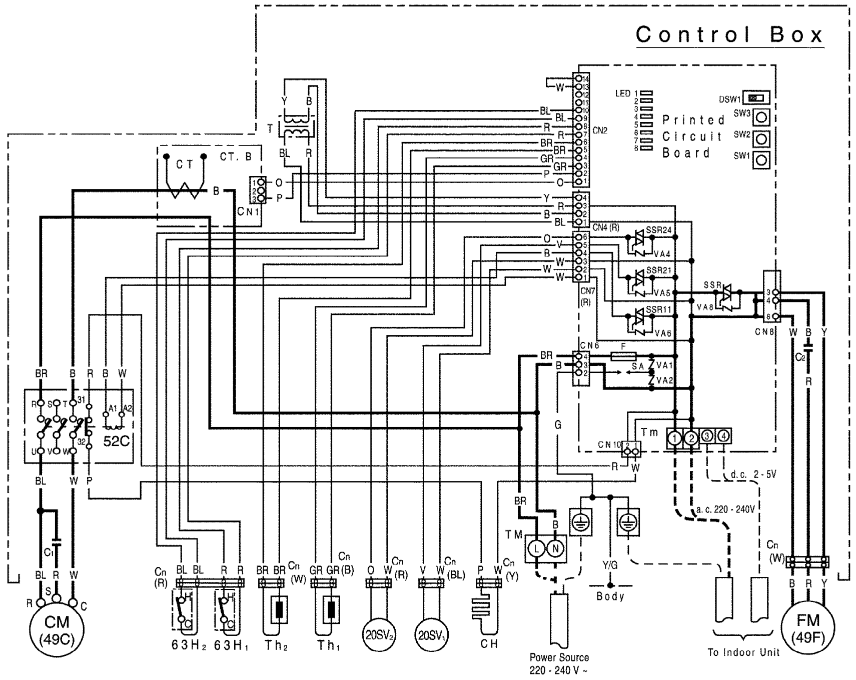
WIRE COLOUR

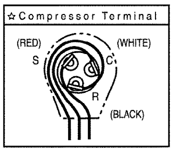
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GRAY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	TM	Terminal Board for Main Circuit	SA	Surge Absorber
52C	Magnetic Contactor for CM	CT. B	Current Trans Board	$VA_{1\sim6}$	Varistor
C_1	Capacitor for CM	Th_1	Thermistor (Compressor discharge temp.)	F	Fuse 250V T 6.3A
C_2	Capacitor for FM	Th_2	Thermistor (Heat exchanger outlet temp.)	$CN_{1\sim10}$	Connector
CH	Crankcase Heater for CM	CT	Current Trans	$SSR_{1,11}$	Solid State Relay
$63H_1$	High Pressure Switch	Cn	Connector	SSR_{21}	Solid State Relay
$63H_2$	High Pressure Switch on Heat-pump	T	Transformer	Tm	Terminal Board for Control Circuit
49C	Internal Protector for CM				
49F	Internal Protector for FM				

CU-W28BBP5


Control Box
Printed Circuit Board
LED 1 2 3 4 5 6 7 8
DSW1
SW3
SW2
SW1
CN2
T
Y B
BL R
CT
CT. B
CN1
O
P
CN4 (R)
SSR24
VA4
SSR21
VA5
SSR11
VA6
CN7 (R)
SSR
VA8
CN8
CN6
F
SA
VA1
VA2
Tm
CN10
52C
A1 A2
C1
C2
CM (49C)
FM (49F)
63H2
63H1
Th2
Th1
20SV2
20SV1
CH
TM
L N
G
Y/G
Body
d.c. 2 - 5V
a.c. 220 - 240V
Power Source 220 - 240 V ~
To Indoor Unit


☆Compressor Terminal
(RED)
S
(WHITE)
C
R
(BLACK)

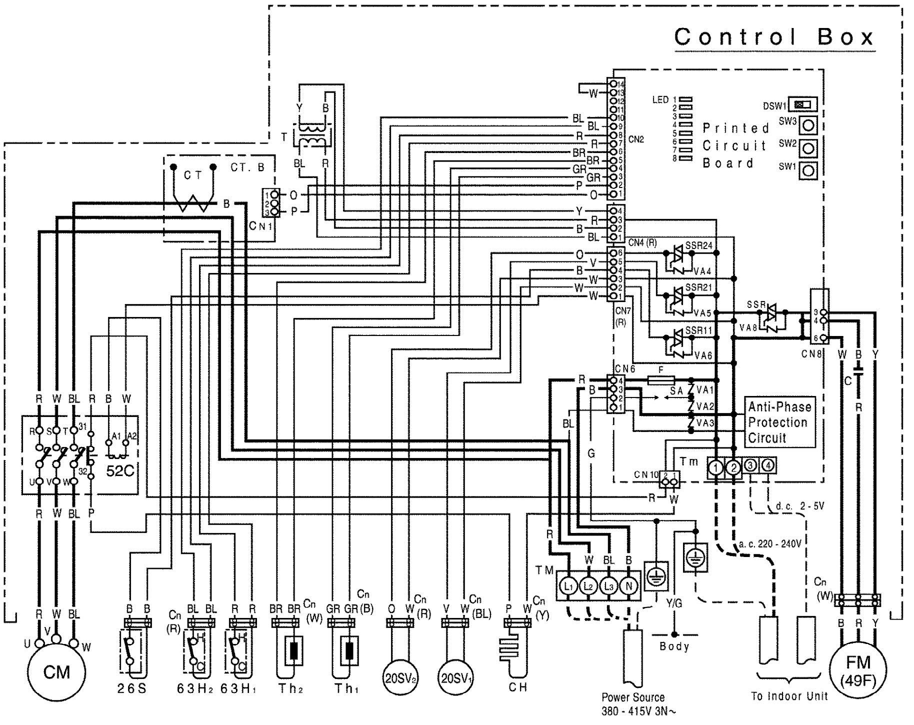
WIRE COLOUR

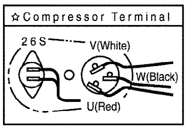
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	$20SV_2$	Bypass Magnetic Valve	SA	Surge Absorber
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit	VA_{1-8}	Varistor
C_1	Capacitor for CM	CT.B	Current Trans Board	F	Fuse 250V T 6.3A
C_2	Capacitor for FM	Th_1	Thermistor (Compressor discharge temp.)	CN_{1-10}	Connector
CH	Crankcase Heater for CM	Th_2	Thermistor (Heat exchanger outlet temp.)	$SSR_{1,11}$	Solid State Relay
$63H_1$	High Pressure Switch	CT	Current Transformer	$SSR_{21,24}$	Solid State Relay
$63H_2$	High Pressure Switch Heat-pump	Cn	Connector	Tm	Terminal Board for Control Circuit
49C	Internal Protector for CM	T	Transformer		
49F	Internal Protector for FM				

CU-W28BBP8


Control Box
Printed Circuit Board
LED 1 2 3 4 5 6 7 8
DSW1
SW3
SW2
SW1
CN2
CN4 (R)
CN7 (R)
CN6
CN8
CN10
CN1
CT
CT. B
T
SSR24
SSR21
SSR11
SSR1
VA1
VA2
VA3
VA4
VA5
VA6
VA8
SA
F
Anti-Phase Protection Circuit
Tm
d.c. 2 - 5V
a.c. 220 - 240V
TM
L1 L2 L3 N
Y/G
Body
Power Source 380 - 415V 3N~
To Indoor Unit
52C
A1 A2
31 32
CM
U V W
26S
63H2
63H1
Th2
Th1
20SV2
20SV1
CH
C
FM (49F)
Cn (R)
Cn (W)
Cn (B)
Cn (BL)
Cn (Y)


☆Compressor Terminal
26S
V(White)
W(Black)
U(Red)

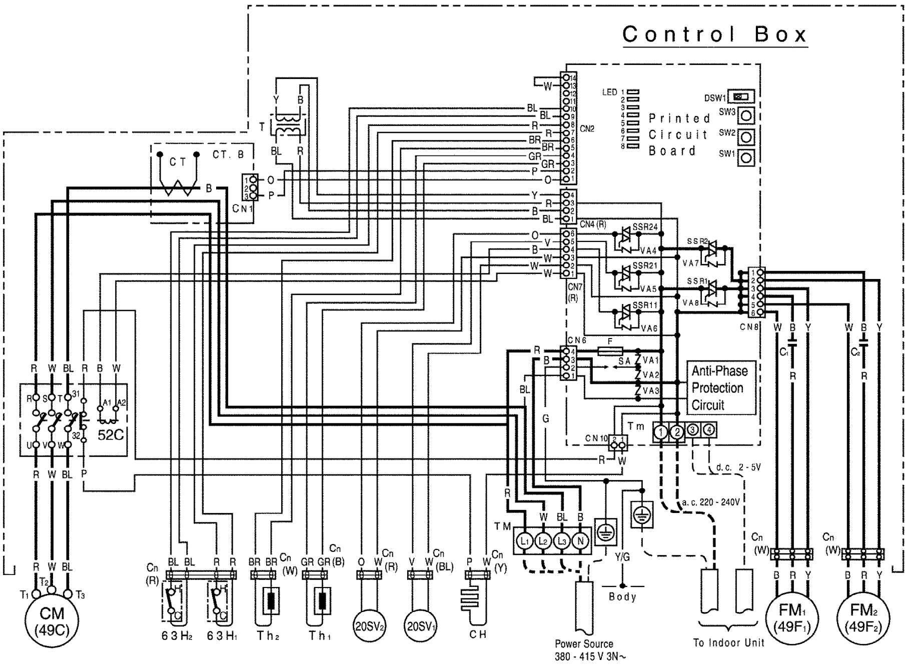
WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

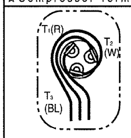
LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve	Printed Circuit Board	
FM	Fan Motor (Outdoor Unit)	$20SV_2$	Bypass Magnetic Valve	SA	Surge Absorber
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit	VA_{1-8}	Varistor
C	Capacitor for FM	CT.B	Current Trans Board	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	Th_1	Thermistor (Compressor discharger temp.)	CN_{1-10}	Connector
$63H_1$	High Pressure Switch	Th_2	Thermistor (Heat exchanger outlet temp.)	$SSR_{1,11}$	Solid State Relay
$63H_2$	High Pressure Switch on Heat-pump	CT	Current Transformer	$SSR_{21,24}$	Solid State Relay
Cn	Connector	T	Transformer	Tm	Terminal Board for Control Circuit
49F	Internal Protector for FM	26S	Bimetal Thermostat for OM		

CU-W34BBP8, CU-W43BBP8


Control Box
Printed Circuit Board
LED
DSW1
SW1
SW2
SW3
CN2
CN1
CN4 (R)
CN6
CN7 (R)
CN8
CN10
SSR24
SSR21
SSR11
SSR2
SSR1
VA1
VA2
VA3
VA4
VA5
VA6
VA7
VA8
SA
F
Anti-Phase Protection Circuit
Tm
CT
CT. B
T
52C
TM
CM (49C)
FM1 (49F1)
FM2 (49F2)
C1
C2
63H2
63H1
Th2
Th1
20SV2
20SV1
CH
Body
Y/G
Power Source 380 - 415 V 3N~
To Indoor Unit
a.c. 220 - 240V
d.c. 2 - 5V

☆Compressor Terminal


T1(R)
T2(W)
T3(BL)

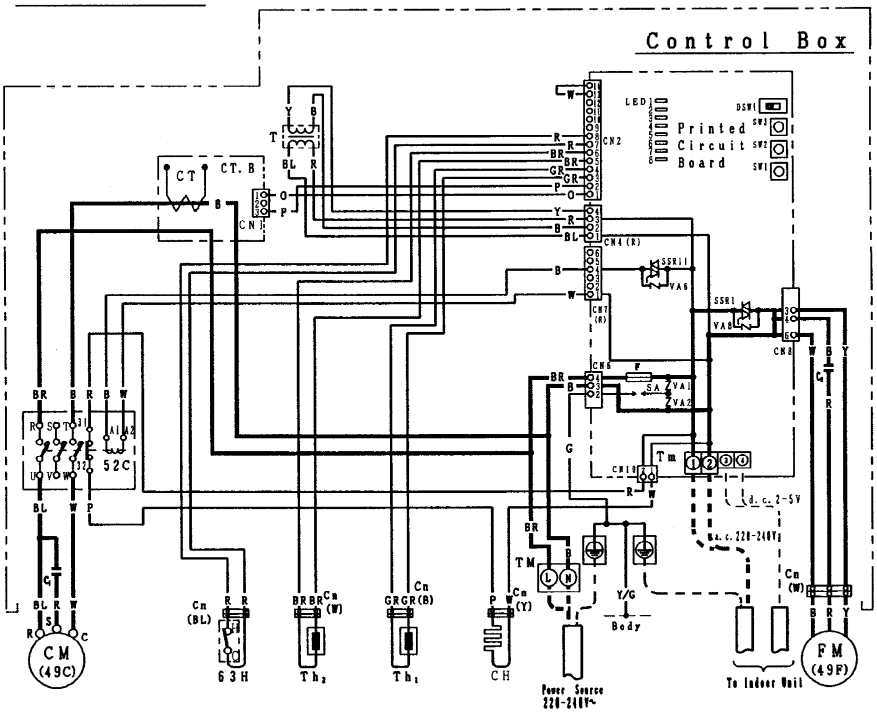
WIRE COLOUR

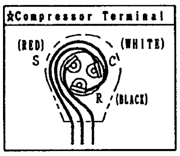
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	$20SV_1$	Reversing Valve		Printed Circuit Board
$FM_{1,2}$	Fan Motor (Outdoor Unit)	$20SV_2$	Bypass Magnetic Valve	SA	Surge Absorber
52C	Magnetic Contactor for CM	TM	Terminal Board for Main Circuit	$VA_{1\sim8}$	Varistor
$C_{1,2}$	Capacitor for FM_{12}	CT.B	Current Trans Board	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	Th_1	Thermistor (Compressor discharger temp.)	$CN_{1\sim10}$	Connector
$63H_1$	High Pressure Switch	Th_2	Thermistor (Heat exchanger outlet temp.)	$SSR_{12,11}$	Solid State Relay
$63H_2$	High Pressure Switch on Heat-pump	CT	Current Transformer	$SSR_{21,24}$	Solid State Relay
Cn	Connector	49C	Internal Protector for CM	Tm	Terminal Board for Control Circuit
T	Transformer	$49F_{1,2}$	Internal Protector for FM_{12}		

ELECTRIC CIRCUIT DIAGRAM


Control Box
Printed Circuit Board
LED 1 2 3 4 5 6 7 8
DSW1
SW3
SW2
SW1
CN2
CN4 (R)
CN7 (R)
CN6
CN8
CN10
CN1
SSR11
SSR1
VA6
VA8
VA1
VA2
SA
F
T
CT
CT. B
Y B BL R
R R BR BR GR GR P O
Y R B BL
B W
BR B
G
W B Y
C_4
Tm
① ② ③ ④
d. c. 2-5V
a. c. 220-240V
BR B R B W
R S T 31 A1 A2
U V W 32
52C
BL W P
C_1
BL R W
S R C
CM
(49C)
Cn (BL)
R R
63H
BR BR Cn (W)
Th₂
GR GR Cn (B)
Th₁
P W Cn (Y)
CH
BR
TM
L N
Y/G
Body
Power Source 220-240V~
To Indoor Unit
Cn (W)
B R Y
FM
(49F)


☆Compressor Terminal
(RED)
S
(WHITE)
C
R
(BLACK)

WIRE COLOUR

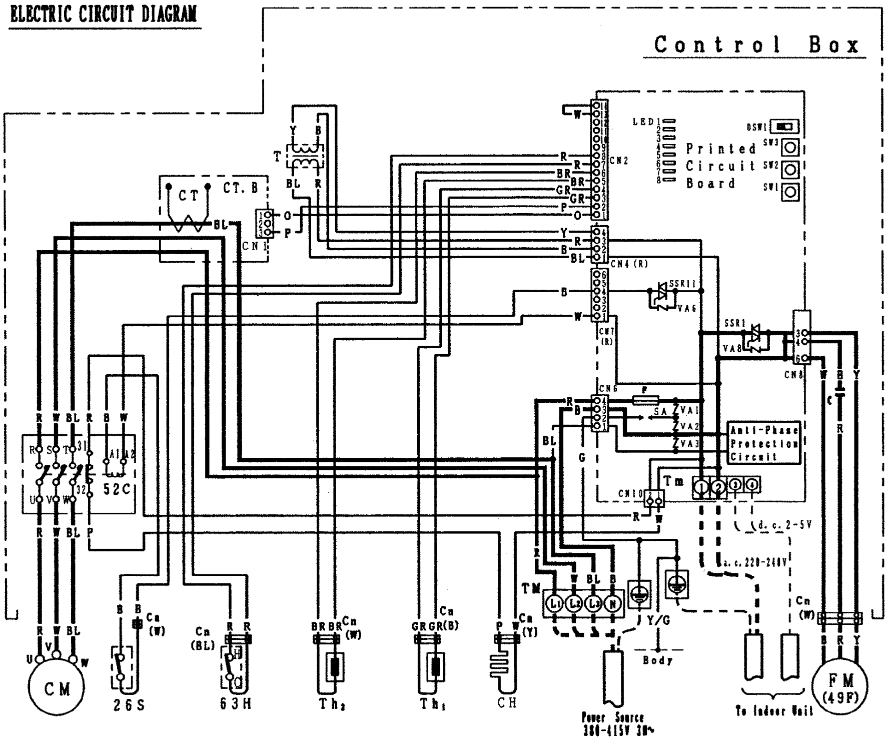
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GRAY		
Y/G	YELLOW / GREEN				

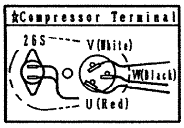
LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit	Printed Circuit Board	
FM	Fan Motor (Outdoor Unit)	CT. B	Current Trans Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th_1	Thermistor(Compressor discharge temp.)	VA_{1-8}	Varistor
C_1	Capacitor for CM	Th_2	Thermistor(Heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
C_4	Capacitor for FM	CT	Current Trans	CN_{1-10}	Connector
CH	Crankcase Heater for CM	Cn	Connector	$SSR_{I, II}$	Solid State Relay
63H	High Pressure Switch	T	Transformer	Tm	Terminal Board for Control Circuit
49C	Internal Protector for CM				
49F	Internal Protector for FM				

CU-V24BBP8

ELECTRIC CIRCUIT DIAGRAM


Control Box
Printed Circuit Board
LED
DSW1
SW3
SW2
SW1
CN2
CN4 (R)
CN7 (R)
CN6
CN8
CN10
CN1
SSR II
SSR I
VA6
VA8
VA1
VA2
VA3
SA
F
Anti-Phase Protection Circuit
Tm
T
CT
CT. B
52C
TM
Y/G
Body
d. c. 2-5V
a. c. 220-240V
CM
26S
63H
Th2
Th1
CH
FM (49F)
C
Power Source 380-415V 3N~
To Indoor Unit


☆Compressor Terminal
26S
V (White)
W (Black)
U (Red)

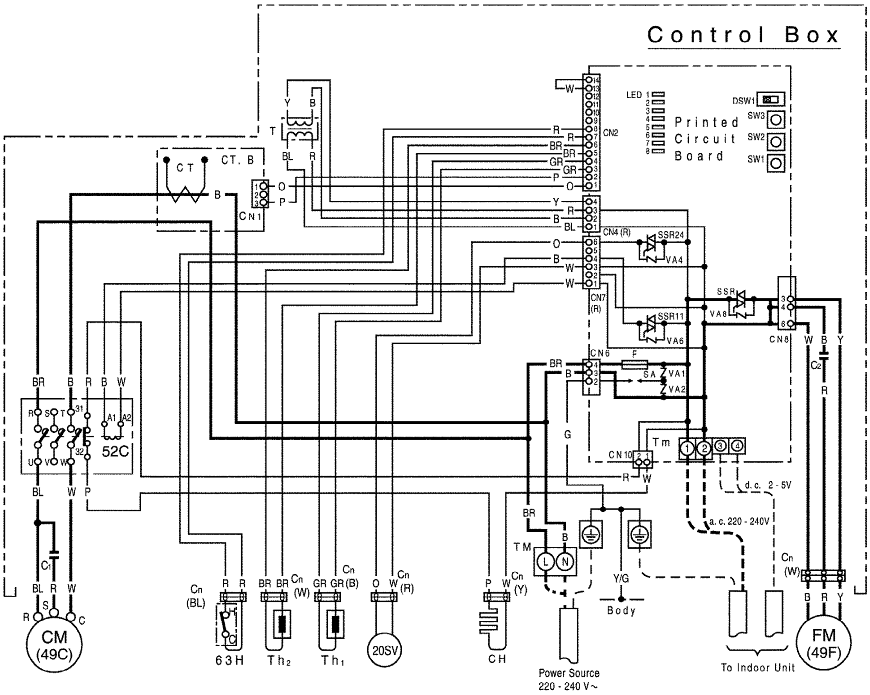
WIRE COLOUR

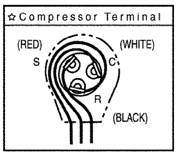
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GRAY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit	Printed Circuit Board	
FM	Fan Motor (Outdoor Unit)	CT. B	Current Trans Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th_1	Thermistor (Compressor discharge temp.)	VA_{1-8}	Varistor
C	Capacitor for FM	Th_2	Thermistor (Heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	CT	Current Trans	CN_{1-10}	Connector
63H	High Pressure Switch	T	Transformer	$SSR_{I,II}$	Solid State Relay
Cn	Connector	26S	Bimetal Thermostat for CM	Tm	Terminal Board for Control Circuit
49F	Internal Protector for FM				

CU-V28BBP5


Control Box
Printed Circuit Board
LED
DSW1
SW1
SW2
SW3
CN1
CN2
CN4 (R)
CN6
CN7 (R)
CN8
CN10
CT
CT. B
T
SSR
SSR11
SSR24
VA1
VA2
VA4
VA6
VA8
SA
F
Tm
TM
52C
A1
A2
C1
C2
CM
(49C)
FM
(49F)
63H
Th2
Th1
20SV
CH
Cn (BL)
Cn (W)
Cn (B)
Cn (R)
Cn (Y)
Cn (W)
Body
Y/G
d.c. 2 - 5V
a.c. 220 - 240V
Power Source
220 - 240 V~
To Indoor Unit


☆Compressor Terminal
(RED)
S
(WHITE)
C
R
(BLACK)

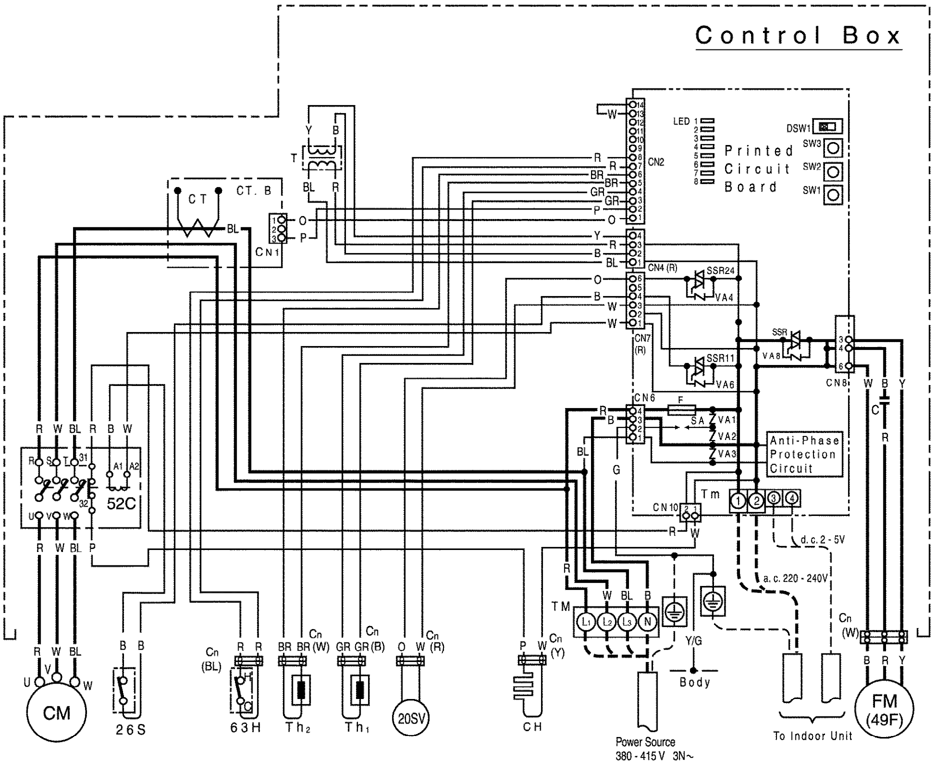
WIRE COLOUR

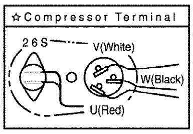
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	CT.B	Current Transformer Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th_1	Thermistor (Compressor discharge temp.)	$VA_{1\sim8}$	Varistor
C_1	Capacitor for CM	Th_2	Thermistor (Heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
C_2	Capacitor for FM	CT	Current Transformer	$CN_{1\sim10}$	Connector
CH	Crankcase Heater for CM	Cn	Connector	$SSR_{1,11}$	Solid State Relay
63H	High Pressure Switch	T	Transformer	$SSR_{21,24}$	Solid State Relay
49C	Internal Protector for CM			Tm	Terminal Board for Control Circuit
49F	Internal Protector for FM				
20SV	Bypass Magnetic Valve				

CU-V28BBP8


Control Box
Printed Circuit Board
LED 1 2 3 4 5 6 7 8
DSW1
SW3
SW2
SW1
CN2
CN4 (R)
CN7 (R)
CN6
CN8
CN10
CN1
SSR24
SSR11
SSR
VA4
VA6
VA8
SA
VA1
VA2
VA3
F
Anti-Phase Protection Circuit
Tm
① ② ③ ④
d.c. 2 - 5V
a.c. 220 - 240V
T
Y B
BL R
CT
CT. B
O
P
TM
L1 L2 L3 N
Y/G
Body
Power Source
380 - 415 V 3N~
To Indoor Unit
52C
A1 A2
R S T
U V W
31 32
CM
26S
63H
Th2
Th1
20SV
CH
C
FM
(49F)
Cn
Cn (BL)
Cn (W)
Cn (B)
Cn (R)
Cn (Y)
Cn (W)


☆Compressor Terminal
26S
V(White)
W(Black)
U(Red)

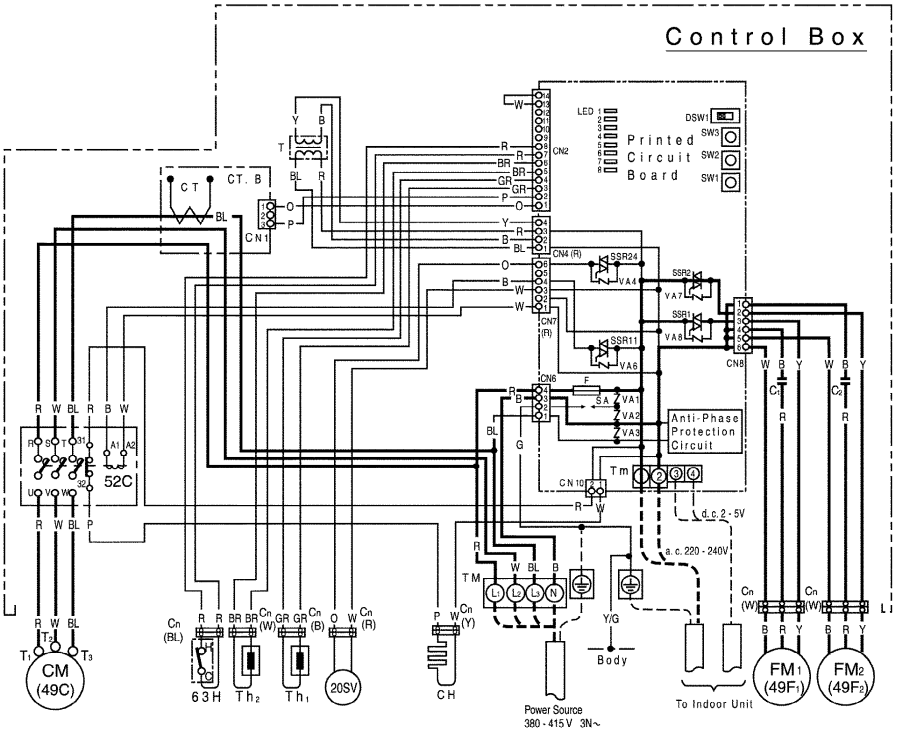
WIRE COLOUR

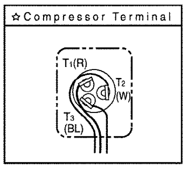
R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit		Printed Circuit Board
FM	Fan Motor (Outdoor Unit)	CT.B	Current Transformer Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th1	Thermistor (Compressor discharge temp.)	VA1~8	Varistor
C	Capacitor for FM	Th2	Thermistor (Heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	CT	Current Transformer	CN1~10	Connector
63H	High Pressure Switch	T	Transformer	SSR1,11	Solid State Relay
Cn	Connector	26S	Bimetal Thermostat for CM	SSR21,24	Solid State Relay
49F	Internal Protector for FM			Tm	Terminal Board for Control Circuit
20SV	Bypass Magnetic Valve				

CU-V34BBP8, CU-V43BBP8


Control Box
Printed Circuit Board
LED
DSW1
SW1
SW2
SW3
CN1
CN2
CN4 (R)
CN6
CN7 (R)
CN8
CN10
CT
CT. B
T
SSR1
SSR2
SSR11
SSR24
VA1
VA2
VA3
VA4
VA6
VA7
VA8
F
SA
Anti-Phase Protection Circuit
Tm
d.c. 2 - 5V
a.c. 220 - 240V
52C
TM
L1
L2
L3
N
Y/G
Body
CM (49C)
T1
T2
T3
63H
Th2
Th1
20SV
CH
Cn (BL)
Cn (W)
Cn (B)
Cn (R)
Cn (Y)
C1
C2
FM1 (49F1)
FM2 (49F2)
Power Source
380 - 415 V 3N~
To Indoor Unit


☆Compressor Terminal
T1(R)
T2 (W)
T3 (BL)

WIRE COLOUR

R	RED	W	WHITE	BL	BLACK
Y	YELLOW	BR	BROWN	V	VIOLET
B	BLUE	P	PINK	G	GREEN
O	ORANGE	GR	GREY		
Y/G	YELLOW / GREEN				

LEGEND

CM	Compressor Motor	TM	Terminal Board for Main Circuit	Printed Circuit Board	
FM$_{1,2}$	Fan Motor (Outdoor Unit)	CT.B	Current Transformer Board	SA	Surge Absorber
52C	Magnetic Contactor for CM	Th$_1$	Thermistor (Compressor discharge temp.)	VA$_{1\sim8}$	Varistor
C$_{1,2}$	Capacitor for FM$_{1,2}$	Th$_2$	Thermistor (Heat exchanger outlet temp.)	F	Fuse 250V T 6.3A
CH	Crankcase Heater for CM	CT	Current Transformer	CN$_{1\sim10}$	Connector
63H	High Pressure Switch	49C	Internal Protector for CM	SSR$_{1,2,11}$	Solid State Relay
Cn	Connector	49F$_{1,2}$	Internal Protector for FM	SSR$_{21,24}$	Solid State Relay
T	Transformer			Tm	Terminal Board for Control Circuit
20SV	Bypass Magnetic Valve				

APPLICABLE FOR ALL MODELS

● INDOOR UNIT PRINTED CIRCUIT BOARD

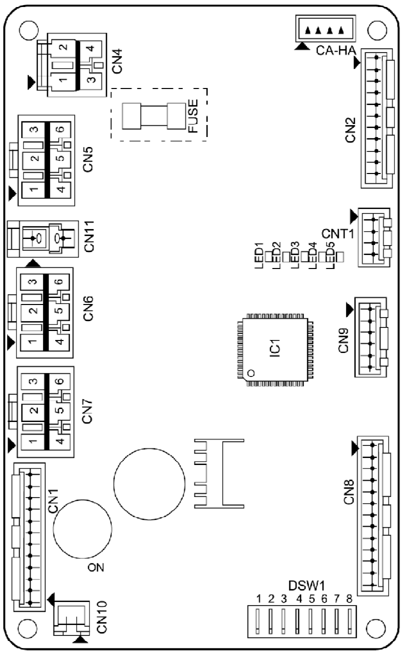
S PHASE	4	CN4
SURGE ABSORBER	3	
————————	2	
R PHASE	1	

INDOOR FAN H	6	CN5
INDOOR FAN M	5	
INDOOR FAN L	4	
————————	3	
COM	2	
COM (SPH)	1	

AIR SWING LOUVRE MOTOR	6	CN6
HEATER	5	
DRAIN PUMP	4	
COM	3	
COM	2	
COM (SPH)	1	

TRANSFORMER 1ST (R PH)	6	CN7
TRANSFORMER 2ND	5	
TRANSFORMER	4	
TRANSFORMER 1ST (S PH)	3	
TRANSFORMER 2ND	2	
TRANSFORMER	1	

ROOM THERMISTOR	12	CN1
ROOM THERMISTOR	11	
PIPE THERMISTOR	10	
PIPE THERMISTOR	9	
————————	8	
————————	7	
LOUVRE SW	6	
LOUVRE SW	5	
COMMUNICATION WITH OUTDOOR UNIT	4	
COMMUNICATION WITH OUTDOOR UNIT	3	
WIRED REMOTE CONTROL	2	
WIRED REMOTE CONTROL	1	


CA-HA
CN4
FUSE
CN2
CN5
CN11
LED1
LED2
LED3
LED4
LED5
CNT1
CN6
IC1
CN9
CN7
CN8
CN1
ON
CN10
DSW1
1 2 3 4 5 6 7 8

FLOAT SW	2	CN10
FLOAT SW	1	

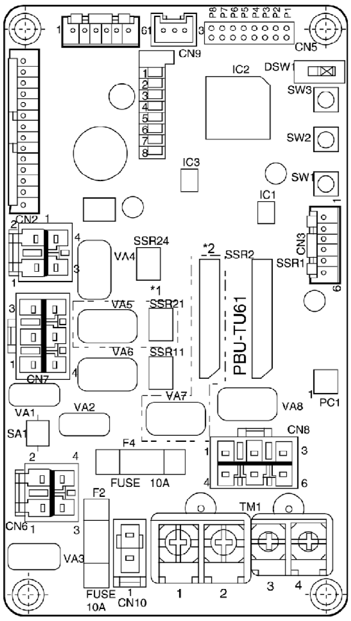
APPLICABLE FOR ALL MODELS

- OUTDOOR UNIT PRINTED CIRCUIT BOARD

*1. HEAT PUMP MODEL ONLY
*2. CU-34BB type } Model only
CU-43BB type }

—	14	CN2
—	13	
GND	12	
DEMAND INPUT	11	
GND	10	
HEATING PRESSURE SW	9	
GND	8	
HIGH PRESSURE SW	7	
GND	6	
PIPE TEMP SENSOR	5	
GND	4	
DISCHARGE TEMP SENSOR	3	
GND	2	
CT	1	

COMMUNICATION WITH INDOOR UNIT	4	TM1
COMMUNICATION WITH INDOOR UNIT	3	
S Phase	2	
R Phase	1	



1
6
1
3
CN9
P8 P7 P6 P5 P4 P3 P2 P1
CN5
IC2
DSW1
SW3
SW2
SW1
1 2 3 4 5 6 7 8
IC3
IC1
CN2
2
1
4
3
1
VA4
SSR24
*2
SSR2
SSR1
CN3
1
6
*1
SSR21
VA5
VA6
SSR11
3
1
4
CN7
PBU-TU61
VA7
VA8
PC1
1
VA1
VA2
SA1
CN8
F4
2
4
FUSE 10A
1
3
4
6
F2
CN6
1
3
TM1
VA3
FUSE 10A
1
CN10
1
2
3
4

S Phase	1	CN8
Fan2(R)	2	
Fan1(R)	3	
S Phase	4	
S Phase	5	
S Phase	6	

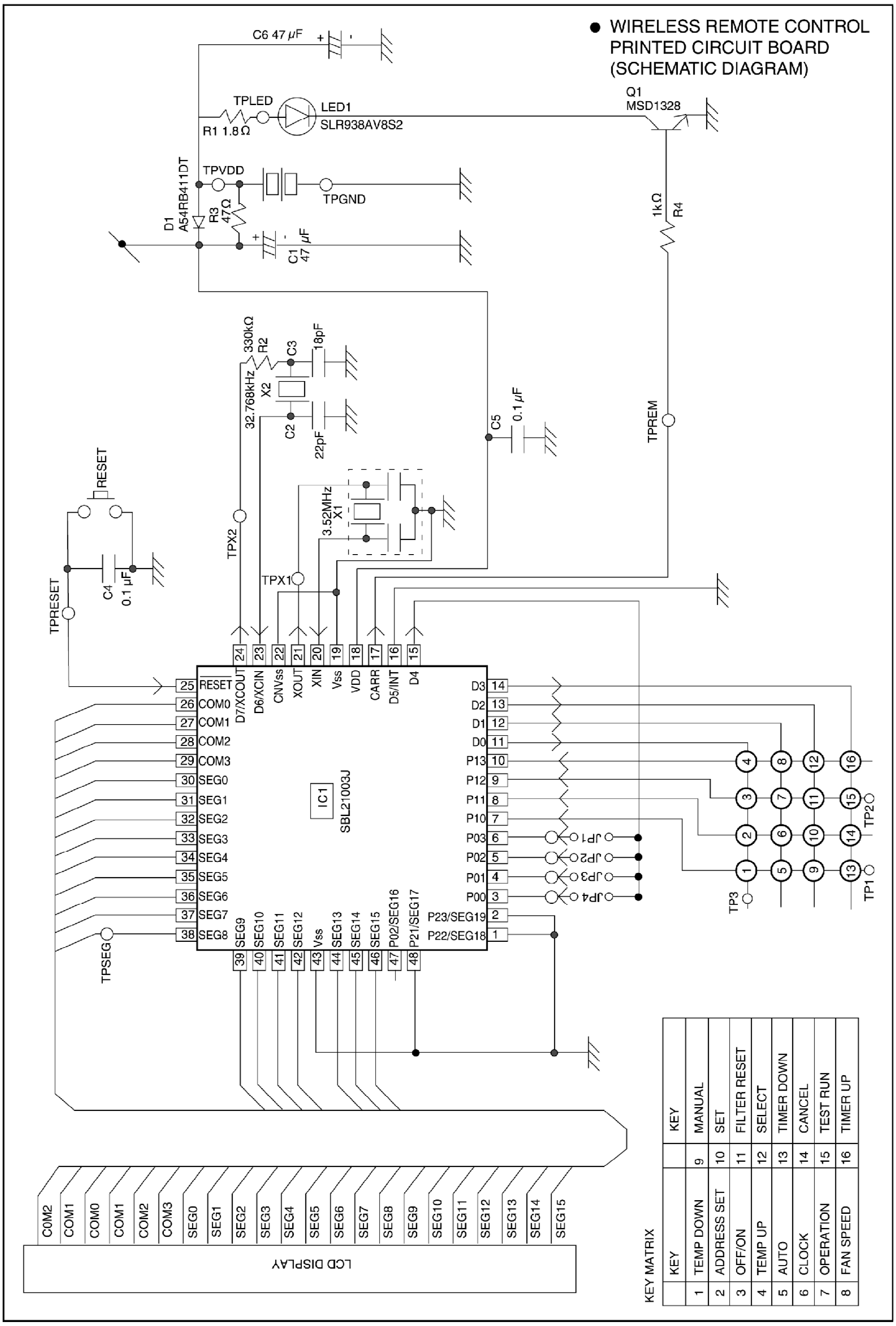
TRANSFORMER 2ND(S)	4	CN4
TRANSFORMER 1ST(R)	3	
TRANSFORMER 2ND(R)	2	
TRANSFORMER 1ST(S)	1	

CRANKCASE HEATER(S)	1	CN10
CRANKCASE HEATER(R)	2	

LIQUID BYPASS valve(R)	6	CN7
REVERSING valve(R)	5	
COMPRESSOR relay(R)	4	
LIQUID BYPASS valve(S)	3	
REVERSING valve(S)	2	
COMPRESSOR relay(S)	1	

R Phase	4	CN6
S Phase	3	
Earth	2	
T Phase	1	

APPLICABLE FOR ALL MODELS


● WIRELESS REMOTE CONTROL PRINTED CIRCUIT BOARD (SCHEMATIC DIAGRAM)
C6 47 µF
TPLED
LED1
SLR938AV8S2
R1 1.8Ω
Q1
MSD1328
TPVDD
TPGND
D1
A54RB411DT
R3
47Ω
C1
47 µF
1kΩ
R4
330kΩ
R2
C3
18pF
32.768kHz
X2
C2
22pF
C5
0.1 µF
TPREM
RESET
3.52MHz
X1
TPX2
TPX1
C4
0.1 µF
TPRESET
IC1
SBL21003J
RESET
COM0
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
D7/XCOUT
D6/XCIN
CNVss
XOUT
XIN
Vss
VDD
CARR
D5/INT
D4
D3
D2
D1
D0
P13
P12
P11
P10
P03
P02
P01
P00
P23/SEG19
P22/SEG18
SEG9
SEG10
SEG11
SEG12
Vss
SEG13
SEG14
SEG15
P02/SEG16
P21/SEG17
JP1
JP2
JP3
JP4
TP1
TP2
TP3
TPSEG
LCD DISPLAY
COM2
COM1
COM0
COM1
COM2
COM3
SEG0
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15

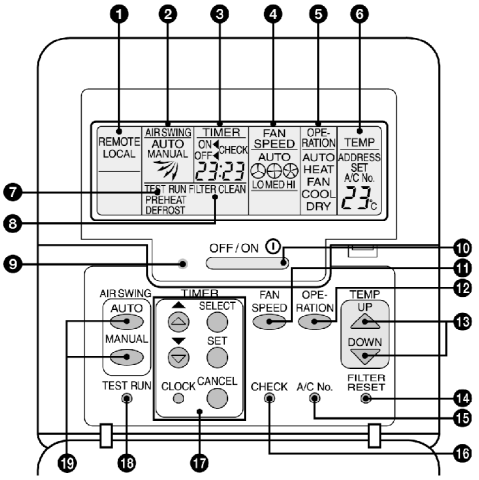
KEY MATRIX

	KEY		KEY
1	TEMP DOWN	9	MANUAL
2	ADDRESS SET	10	SET
3	OFF/ON	11	FILTER RESET
4	TEMP UP	12	SELECT
5	AUTO	13	TIMER DOWN
6	CLOCK	14	CANCEL
7	OPERATION	15	TEST RUN
8	FAN SPEED	16	TIMER UP

7. OPERATING INSTRUCTION

7.1. Wired Remote Control (OPTIONAL PARTS)

Name and function of each part



❶ ❷ ❸ ❹ ❺ ❻
REMOTE
LOCAL
AIR SWING
AUTO
MANUAL
TIMER
ON
OFF
CHECK
23:23
FAN SPEED
AUTO
LO MED HI
OPE-RATION
AUTO
HEAT
FAN
COOL
DRY
TEMP
ADDRESS
SET
A/C No.
23°C
TEST RUN
FILTER CLEAN
PREHEAT
DEFROST
❼
❽
❾
OFF / ON
❿
⓫
⓬
⓭
AIR SWING
AUTO
MANUAL
TIMER
SELECT
SET
CLOCK
CANCEL
FAN SPEED
OPE-RATION
TEMP
UP
DOWN
TEST RUN
CHECK
A/C No.
FILTER RESET
⓮
⓯
⓰
⓲
⓱
⓳

❶ **REMOTE**
The OFF/ON button cannot be used.

LOCAL
All remote control functions can be used.

❷ **Airflow direction setting display**

❸ **Timer/time setting display**

❹ **Fan speed display**

❺ **Operation mode selection display**

❻ **Temperature setting display (16˚C - 31˚C)**

❼ **TEST RUN**
Indicates that the unit is running in test operation mode.

PREHEAT
Indicates that the unit is running in pre-heating mode.

DEFROST
Indicates that the unit is running in dedrosting mode.

❽ **FILTER CLEAN**
(Appears after the cumulative running time reaches approximately 2,500 hours of operation.)

❾ **Operation indicator**
Lights up in red when the unit is operating.

❿ **OFF/ON button**
Used to start and stop the operation.

⓫ **FAN SPEED button**
Used to select the fan speed of high (HI), medium (MED), low (LO) or autofan (AUTO).

⓬ **OPERATION button**
Used to select the operation of FAN, COOL, DRY, AUTO or HEAT.

⓭ **TEMP (UP/DOWN) buttons**
Used to select the desired temperature.

⓮ **FILTER RESET button**
Press to reset the "FILTER CLEAN" after washing the filter.

⓯ **A/C No. button***
This switch is used during group control.
It is not needed for normal operation.

⓰ **CHECK button**
Press this button if the check display is flashing.

⓱ **TIMER/CLOCK SET buttons**
Used to set the timer operation and the current time.

⓲ **TEST RUN button***

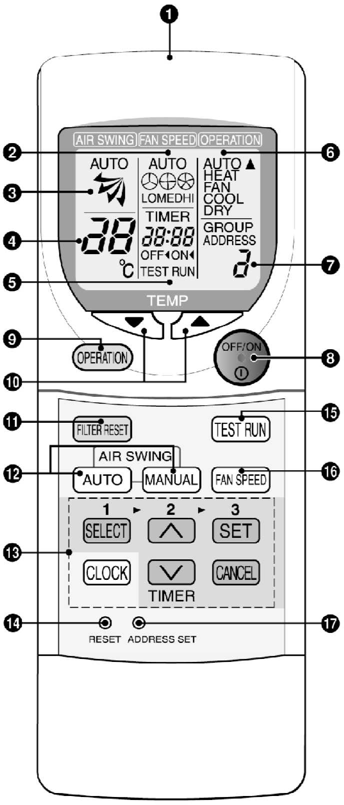
⓳ **AIR SWING (AUTO/MANUAL) buttons**
Used to determine the air swing condition, either auto or manual.

NOTES:

- **Ensure that the correct button is pressed as simultaneous pressing of the multiple buttons will not make the setting correct.**
- **The illustration above is for explanatory purposes only. The appearance will be different during actual operation.**
- **Do not operate the remote control with wet hands. Otherwise, electric shock or malfunction may occur.**
- **Do not press the remote control buttons with sharp object as this may damage the remote control.**
- **Buttons marked with * are not needed for normal operation. If one of these buttons is pressed by mistake, press the same button once more to cancel the operation.**
- **When the power resumed after power failure, the unit will restart automatically with all the previous settings preserved by the memory function. (Auto restart function)**

7.2. Wireless Remote Control (OPTIONAL PARTS)

Name and function of each part


❶
❷
❸
❹
❺
❻
❼
❽
❾
❿
⓫
⓬
⓭
⓮
⓯
⓰
⓱
AIR SWING
FAN SPEED
OPERATION
AUTO
AUTO
LO MED HI
TIMER
AUTO ▲
HEAT
FAN
COOL
DRY
GROUP
ADDRESS
28
88:88
°C
OFF◀ON◀
TEST RUN
TEMP
OPERATION
OFF/ON
FILTER RESET
TEST RUN
AIR SWING
AUTO
MANUAL
FAN SPEED
1
2
3
SELECT
SET
CLOCK
CANCEL
TIMER
RESET
ADDRESS SET

❶ **Transmitter**
Transmits the remote control signal.

❷ **Fan speed display**

❸ **Airflow direction setting display**

❹ **Temperature setting display (16˚C - 31˚C)**

❺ **Timer/time setting display**
Shows the timer operation setting time or the current time.

❻ **Operation selection display**

❼ **Address number display**

❽ **OFF/ON button**
Used to start and stop the operation.

❾ **OPERATION button**
Used to select the operation of FAN, COOL, DRY, AUTO or HEAT.

❿ **TEMP (UP/DOWN) buttons**
Used to select the desired temperature.

⓫ **FILTER RESET button**
Press to cancel the "FILTER" indicator light on the ray receiver.

⓬ **AIR SWING (AUTO/MANUAL) buttons**
Used to determine the air swing condition, either auto or manual.

⓭ **TIMER/CLOCK SET buttons**
Used to set the timer operation and the current time.

⓮ **RESET button**
Pressing this button will clear all the settings from memory.
You will then need to make the settings again.

⓯ **TEST RUN button***

⓰ **FAN SPEED button**
Used to select the fan speed of high (HI), medium (MED), low (LO) or autofan (AUTO).

⓱ **ADDRESS SET button***
Used to change the address setting when using more than one indoor unit.

NOTES:

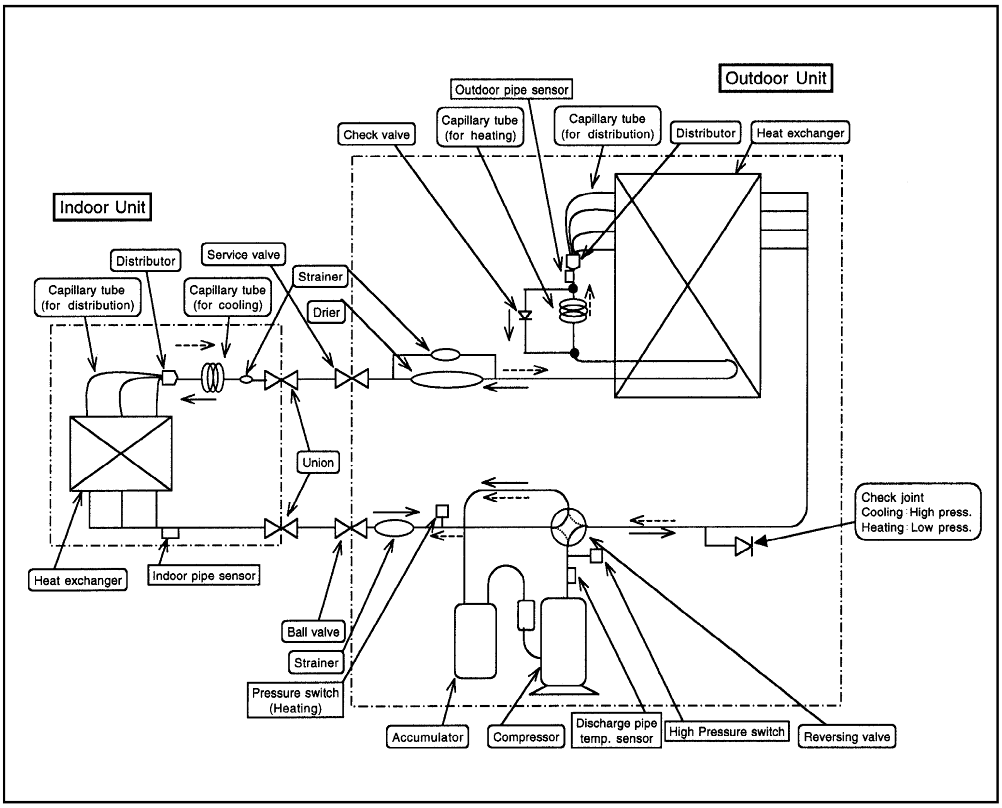
- **Ensure that the correct button is pressed as simultaneous pressing of the multiple buttons will not make the setting correct.**
- **The illustration above is for explanatory purpose only. The appearance will be different during actual operation.**
- **If using the wireless remote control in conjunction with the wired remote control, the settings made from the wireless remote control will appear on the wired remote control display (except when making timer settings).**
- **Buttons marked with * are not needed for normal operation. If one of these buttons is pressed by mistake, press the same button once more to cancel the operation.**
- **When the power resumed after power failure, the unit will restart automatically with all previous settings preserved by the memory**

function. (Auto restart function)

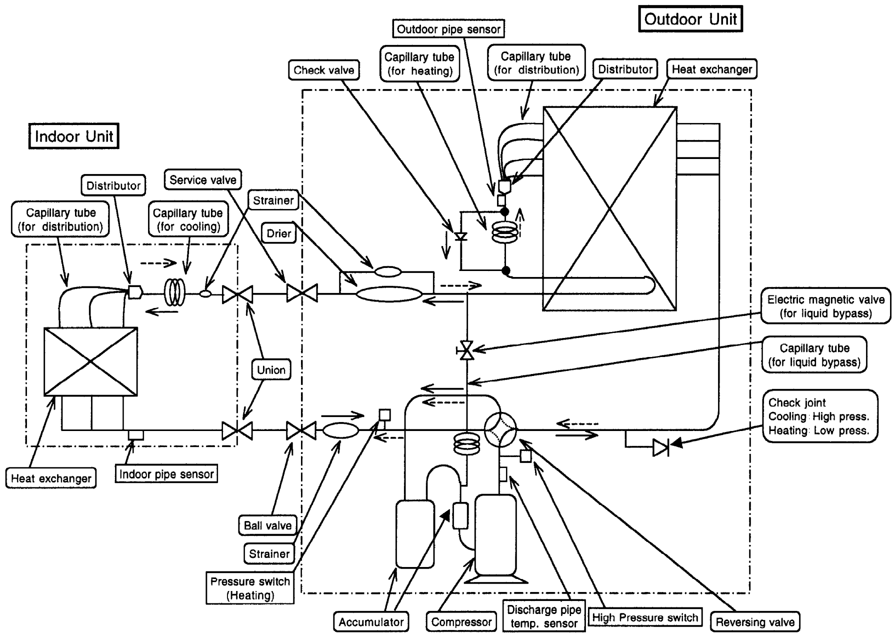
8. REFRIGERATION CYCLE

8.1. Heating Model

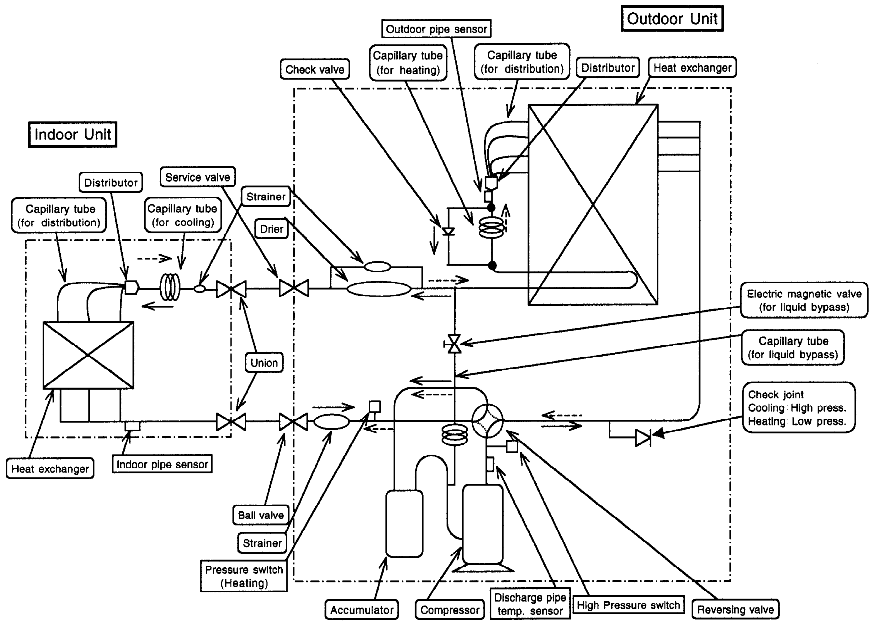
CS-W18BD4P / CU-W18BBP5, CS-W18BTP / CU-W18BBP5, CS-W18BD3P / CU-W18BBP5 / CS-W24BB4P / CU-W24BBP5, CS-W24BTP / CU-W24BBP5, CS-W24BD2P / CU-W24BBP5, CS-W24BD3P / CU-W24BBP5


Outdoor Unit
Outdoor pipe sensor
Check valve
Capillary tube (for heating)
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Capillary tube (for distribution)
Capillary tube (for cooling)
Strainer
Drier
Union
Check joint
Cooling High press.
Heating Low press.
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Pressure switch (Heating)
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch
Reversing valve

CS-W28BD4P / CU-W28BBP5, CS-W28BTP / CU-W28BBP5, CS-W28BD2P / CU-W28BBP5, CS-W28BD3P / CU-W28BBP5, / CS-W28BB4P / CU-W28BBP8, CS-W28BTP / CU-W28BBP8, CS-W28BD2P / CU-W28BBP8, CS-W28BD3P / CU-W28BBP8

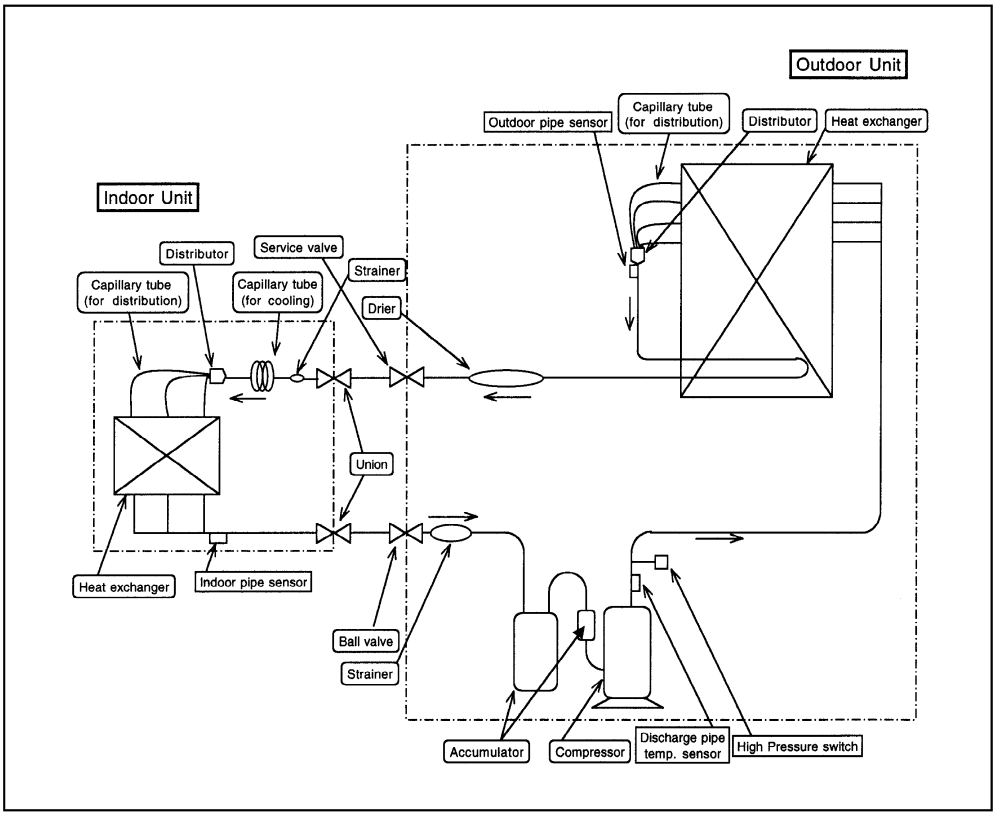

Outdoor Unit
Outdoor pipe sensor
Check valve
Capillary tube (for heating)
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Strainer
Drier
Capillary tube (for distribution)
Capillary tube (for cooling)
Electric magnetic valve (for liquid bypass)
Capillary tube (for liquid bypass)
Union
Check joint
Cooling: High press.
Heating: Low press.
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Pressure switch (Heating)
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch
Reversing valve

CS-W34BB4P / CU-W34BBP8, CS-W34BTP / CU-W34BBP8, CS-W34BD2P / CU-W34BBP8, CS-W34BD3P / CU-W34BBP8 / CS-W43BB4P / CU-W43BBP8, CS-W43BTP / CU-W43BBP8, CS-W43BD2P / CU-W43BBP8, CS-W43BD3P / CU-W43BBP8

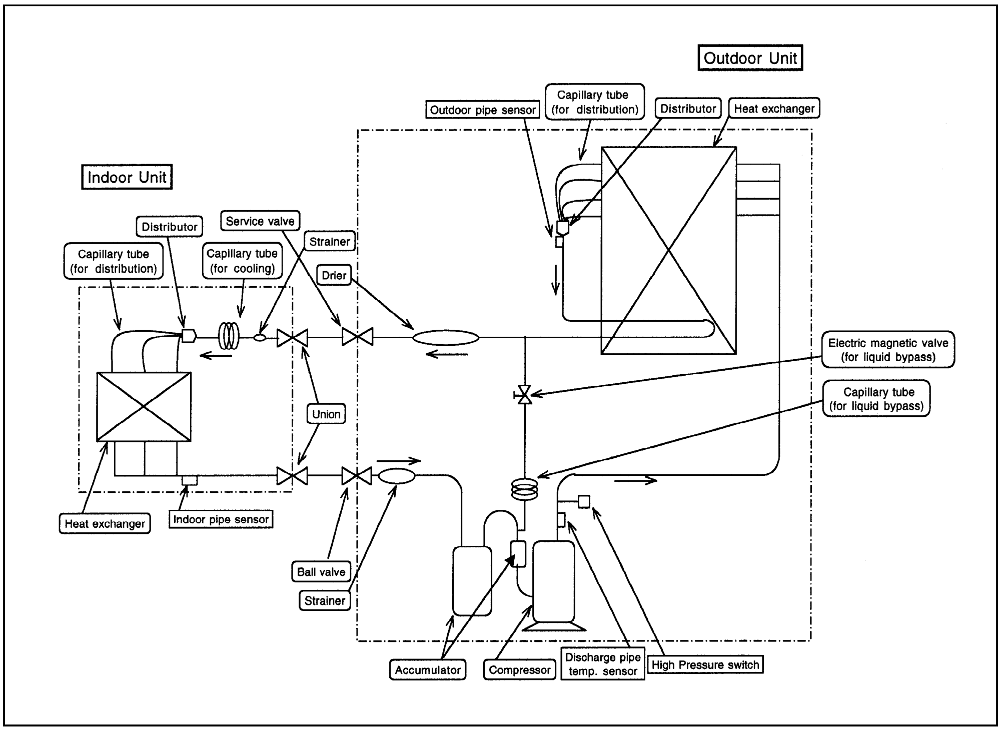

Outdoor Unit
Outdoor pipe sensor
Check valve
Capillary tube (for heating)
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Strainer
Drier
Capillary tube (for distribution)
Capillary tube (for cooling)
Electric magnetic valve (for liquid bypass)
Capillary tube (for liquid bypass)
Union
Check joint
Cooling: High press.
Heating: Low press.
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Pressure switch (Heating)
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch
Reversing valve

8.2. Cooling Only Model

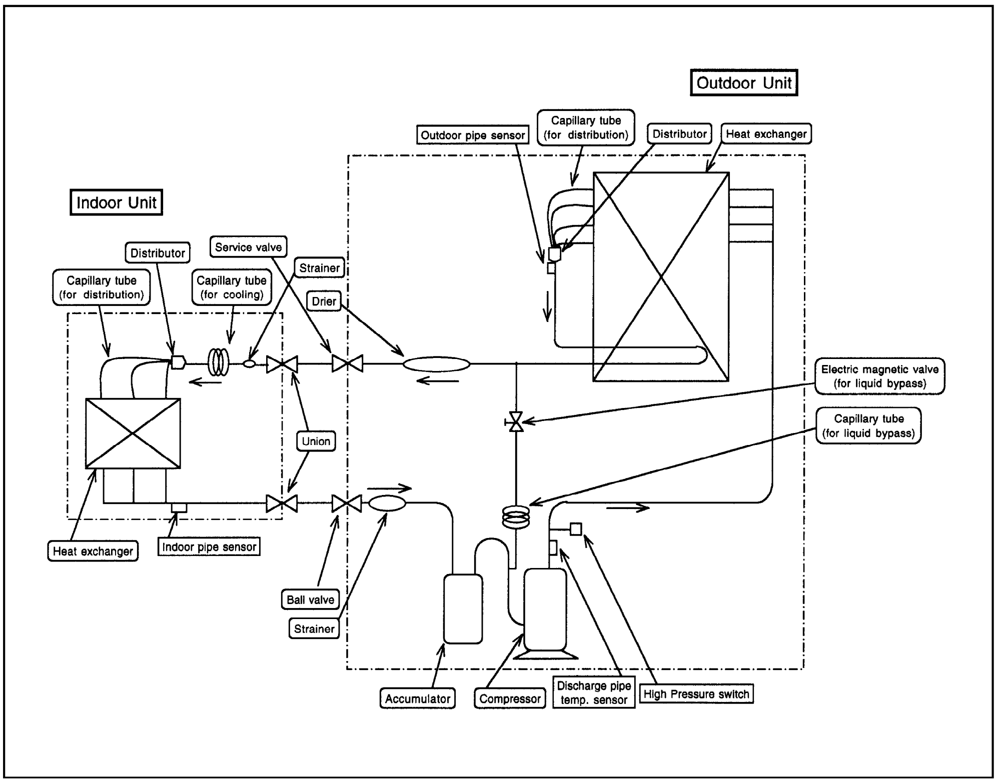
CS-W18BD4P / CU-V18BBP5, CS-W18BTP / CU-V18BBP5, CS-W18BD3P / CU-V18BBP5, / CS-W24BD4P / CU-V24BBP5, CS-W24BTP / CU-V24BBP5, CS-W24BD2P / CU-V24BBP5, CS-W24BD3P / CU-V24BBP5, / CS-W24BB4P / CU-V24BBP8, CS-W24BTP / CU-V24BBP8, CS-W24BD2P / CU-V24BBP8, CS-W24BD3P / CU-V24BBP8


Outdoor Unit
Outdoor pipe sensor
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Strainer
Capillary tube (for distribution)
Capillary tube (for cooling)
Drier
Union
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch

CS-W28BB4P / CU-V28BBP5, CS-W28BTP / CU-V28BBP5, CS-W28BD2P / CU-V28BBP5, CS-W28BD3P / CU-V28BBP5, / CS-W28BB4P / CU-V28BBP8, CS-W28BTP / CU-V28BBP8, CS-W28BD2P / CU-V28BBP8, CS-W28BD3P / CU-V28BBP8


Outdoor Unit
Outdoor pipe sensor
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Strainer
Capillary tube (for distribution)
Capillary tube (for cooling)
Drier
Electric magnetic valve (for liquid bypass)
Capillary tube (for liquid bypass)
Union
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch

CS-W34BB4P / CU-V34BBP8, CS-W34BTP / CU-V34BBP8, CS-W34BD2P / CU-V34BBP8, CS-W34BD3P / CU-V34BBP8, / CS-W43BB4P / CU-V43BBP8, CS-W43BTP / CU-V43BBP8, CS-W43BD2P, CU-V43BBP8, CS-W43BD3P / CU-V43BBP8


Outdoor Unit
Outdoor pipe sensor
Capillary tube (for distribution)
Distributor
Heat exchanger
Indoor Unit
Distributor
Service valve
Strainer
Capillary tube (for distribution)
Capillary tube (for cooling)
Drier
Electric magnetic valve (for liquid bypass)
Capillary tube (for liquid bypass)
Union
Heat exchanger
Indoor pipe sensor
Ball valve
Strainer
Accumulator
Compressor
Discharge pipe temp. sensor
High Pressure switch

9. OPERATION RANGE

Power Supply

The applicable voltage range for each unit is given in the following table. The working voltage among the three phases must be balanced within a 3% deviation from each voltage at the compressor terminals. The starting voltage must be higher than 85% of the rated voltage.
Power Supply

MODEL CU-	Unit Main Power		Applicable Voltage		MODEL CU-	Unit Main Power		Appli Vol
	Phase, Volts	Hz	Max	Min		Phase, Volts	Hz	Max
W/V18BBP5	1~220	50	242	198	V24BBP8	3N~380	50	418
W/V24BBP5	1~230	50	253	207	W/V28BBP8	3N~400	50	440
W/V28BBP5	1~240	50	264	216	W/V34BBP8	3N~415	50	457
					W/V43BBP8			

Indoor and Outdoor Temperature

- Cooling only type / Model (50Hz) V18BBP5, V24BBP5(8), V28BBP5(8), V34BBP8, V43BBP8

Operating	Hz	Indoor Temp. (D.B./W.B.) (°C)		Outdoor Temp. (D.B./W	
		Max	Min	Max	
Cooling	50	32/23	21/15	43/-	

- Heat pump type / Model (50Hz) W18BBP5, W24BBP5, W28BBP5(8), W34BBP8, W43BBP8

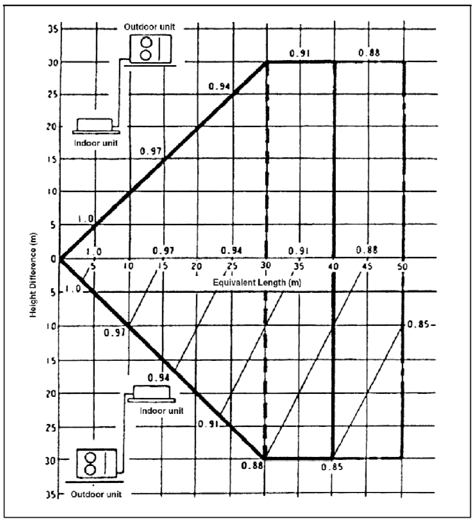
Operating	Hz	Indoor Temp. (D.B./W.B.) (°C)		Outdoor Temp. (D.B./W.B	
		Max	Min	Max	Mi
Cooling	50	32/23	21/15	43/-	-5/
Heating	50	27/-	16/-	24/18	-10

10. PIPE LENGTH

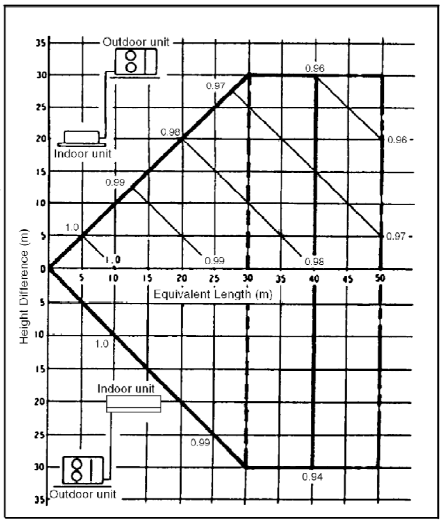
■ CORRECTION OF COOLING CAPACITY AND HEATING CAPACITIES

Correction of cooling and heating capacities according to the connecting pipe length. / The data of cooling capacities (marked on the name plate) are based on 5 meters connecting pipe and horizontal installation. / For other pipe length of other installation multiply by the following correction factor to determine the revised cooling capacity.

[Cooling]



[Heating]

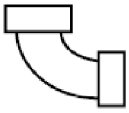


Equivalent Length = actual pipe length + number of elbow
x ELE + number of oil trap x ELO
ELE : equivalent length of elbow
ELO : equivalent length of oil trap

■ REFRIGERANT ADDITIONAL CHARGE

- The piping length exceeds 30 metres. / APPLICABLE FOR ALL MODELS

Before shipment, this air conditioner is filled with the rated amount of refrigerant subject to 30m piping length. (The rated amount of refrigerant is indicated on the name plate.) But when the piping length exceeds 30m, additional charge is required according to the following table.

Outer diameter of gas side pipe mm (inch)	ELE 
9.52 (3/8)	0.18
12.7 (1/2)	0.20
15.88 (5/8)	0.25
19.05 (3/4)	0.35

Model	Ref. Charge
2.0~2.5HP	20g per 1m
3~5HP	50g per 1m

■ **REFRIGERANT ADDITIONAL CHARGE**

1. Piping installation by standard piping

- At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent pipe length of 30m. (Refer to the following table)
But when the piping length exceeds 30m, additional charge is required according to the following table.
Example:
CU-W34BBP8
In case of 50m long pipe (one way), the amount of refrigerant to be replenished is: (50 - 30) x 50 = 1,000g

■ Cooling only type (50Hz)

Model Name CU-	Standard piping specification			
	Liquid piping (dia.mm)	Gas piping (dia.mm)	Gas charge-less length (m)	Additional gas volume (g/m)
V18BBP5	6.35	12.7	30	20
V24BBP5	6.35	15.88	30	20
V24BBP8	6.35	15.88	30	20
V28BBP5	9.52	15.88	30	50
V28BBP8	9.52	15.88	30	50
V34BBP8	9.52	19.05	30	50
V43BBP8	9.52	19.05	30	50

■ Heat pump type (50Hz)

Model Name CU-	Standard piping specification			
	Liquid piping (dia.mm)	Gas piping (dia.mm)	Gas charge-less length (m)	Additional gas volume (g/m)
W18BBP5	6.35	12.7	30	20
W24BBP5	6.35	15.88	30	20
W28BBP5	9.52	15.88	30	50
W28BBP8	9.52	15.88	30	50
W34BBP8	9.52	19.05	30	50
W43BBP8	9.52	19.05	30	50

⚠ **Attention**

- Please do not decrease the gas piping size. (It causes the breakdown of the compressor).

- The equivalent piping length and the cooling and heating capacity change rate are same as the standard piping specification.

11. OPERATING CHARACTERISTIC

HEAT PUMP MODEL

Model		Main Power Source		Compressor Motor			Indoor Unit Fan Motor		Outdoor unit Fan Motor		ELECTRICA (50H
		Voltage (V)	Frequency (Hz)	S.C. (A)	R.C. (A) COOL / HEAT	IPT (kW) COOL / HEAT	R.C. (A)	IPT (kW)	R.C. (A)	IPT (kW)	F.C. (A) COOL / HEAT
	CS-W18BB4P	220	50	38	7.71 / 7.91	1.67 / 1.73	0.28	0.06	0.41	0.09	8.40 / 8.60
H	CU-W18BBP5	230	50	40	7.30 / 7.60	1.66 / 1.72	0.29	0.07	0.41	0.09	8.00 / 8.30
E		240	50	42	6.97 / 7.17	1.65 / 1.71	0.30	0.07	0.43	0.10	7.70 / 7.90
A	CS-W24BB4P	220	50	64	10.9 / 11.1	2.39 / 2.43	0.32	0.07	0.46	0.10	11.7 / 11.9
T	CU-W24BBP5	230	50	66	10.4 / 10.6	2.38 / 2.42	0.34	0.07	0.47	0.11	11.2 / 11.4
		240	50	68	10.0 / 10.1	2.37 / 2.41	0.35	0.08	0.48	0.11	10.8 / 10.9
P	CS-W28BB4P	220	50	68	12.3 / 13.0	2.68 / 2.84	0.35	0.08	0.46	0.10	13.1 / 13.8
U	CU-W28BBP5	230	50	70	11.7 / 12.4	2.67 / 2.83	0.37	0.08	0.47	0.11	12.5 / 13.2
M		240	50	72	11.1 / 11.8	2.66 / 2.82	0.38	0.09	0.48	0.11	12.0 / 12.7

P	CS-W28BB4P	380	50	28	4.03 / 4.23	2.54 / 2.68	0.35	0.08	0.46	0.10	4.30 / 4.50
	CU-W28BBP8	400	50	29	4.02 / 4.22	2.53 / 2.67	0.37	0.08	0.47	0.11	4.30 / 4.50
M		415	50	30	4.01 / 4.21	2.52 / 2.66	0.38	0.09	0.48	0.11	4.30 / 4.50
O	CS-W34BB4P	380	50	39	4.67 / 4.97	3.55 / 3.74	0.62	0.13	0.91	0.20	6.20 / 6.50
D	CU-V34BBP8	400	50	41	4.63 / 4.93	3.53 / 3.72	0.63	0.14	0.94	0.21	6.20 / 6.50
E		415	50	42	4.58 / 4.88	3.50 / 3.69	0.65	0.15	0.97	0.23	6.20 / 6.50
L	CS-W43BB4P	380	50	58	7.17 / 7.37	4.08 / 4.25	0.89	0.19	0.99	0.22	7.80 / 8.00
	CU-W43BBP8	400	50	58	7.16 / 7.36	4.06 / 4.23	0.91	0.20	1.02	0.23	7.80 / 8.00
		415	50	58	7.14 / 7.34	4.03 / 4.20	0.94	0.21	1.04	0.25	7.80 / 8.00

COOLING ONLY MODEL

	CS-W18BB4P	220	50	38	7.71	1.67	0.28	0.06	0.41	0.09	8.40
C	CU-V18BBP5	230	50	40	7.30	1.66	0.29	0.07	0.41	0.09	8.00
O		240	50	42	6.97	1.65	0.30	0.07	0.43	0.10	7.70
O	CS-W24BB4P	220	50	64	10.9	2.39	0.32	0.07	0.46	0.10	11.7
L	CU-V24BBP5	230	50	66	10.4	2.38	0.34	0.07	0.47	0.11	11.2
I		240	50	68	10.0	2.37	0.35	0.08	0.48	0.11	10.8
N	CS-W24BB4P	380	50	27	3.17	2.20	0.32	0.07	0.46	0.10	3.95
G	CU-V24BBP8	400	50	28	3.14	2.19	0.34	0.07	0.47	0.11	3.95
		415	50	29	3.12	2.18	0.35	0.09	0.48	0.11	3.95
O	CS-W28BB4P	220	50	68	12.8	2.68	0.35	0.08	0.46	0.10	13.1
N	CU-V28BBP5	230	50	70	12.2	2.67	0.37	0.08	0.47	0.11	12.5
L		240	50	72	11.7	2.66	0.38	0.09	0.48	0.11	12.0
Y	CS-W28BB4P	380	50	28	3.49	2.54	0.35	0.08	0.46	0.10	4.30
	CU-V28BBP8	400	50	29	3.46	2.53	0.37	0.08	0.47	0.11	4.30
M		415	50	30	3.44	2.52	0.38	0.09	0.48	0.11	4.30
O	CS-W34BB4P	380	50	39	5.69	3.55	0.62	0.13	0.91	0.20	6.20
D	CU-V34BBP8	400	50	41	5.68	3.53	0.63	0.14	0.94	0.21	6.20
E		415	50	42	5.66	3.50	0.65	0.15	0.97	0.23	6.20
L	CS-W43BB4P	380	50	58	7.17	4.08	0.89	0.19	0.99	0.22	7.80

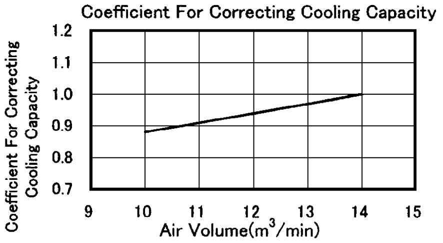
	CU-W43BBP8	**400**	**50**	**58**	**7.16**	**4.06**	**0.91**	**0.20**	**1.02**	**0.23**	**7.80**
		415	**50**	**58**	**7.14**	**4.03**	**0.94**	**0.21**	**1.04**	**0.25**	**7.80**

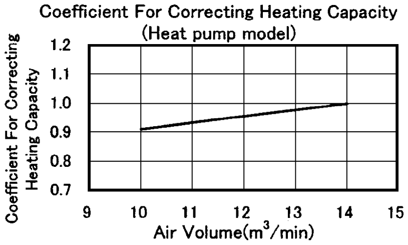
Legend : S.C. = Starting Current, R.C. = Running Current, IPT = Power Consumption

12. FAN PERFORMANCE

●CS-W18BB4P

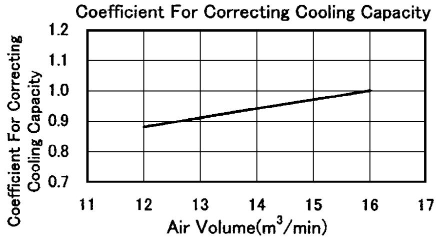
Model		Indoor Unit			Outdoor Unit
ITEM		CS-W18BB4P			CU-V/W18BBP5
Mode		Hi	Me	Lo	Hi
Air Volume	m^3/min	**14**	**12**	**10**	**43**
Running Current	A	0.32	0.24	0.19	0.45
Power Consumption	kW	0.07	0.05	0.04	0.10
Fan Speed	r/min	389	338	298	605

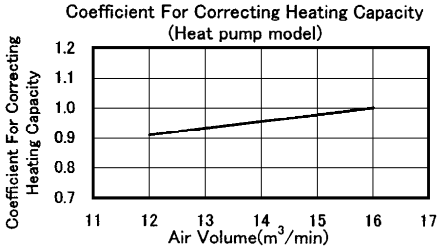




●CS-W24BB4P

Model		Indoor Unit			Outdoor Unit
ITEM		CS-W24BB4P			CU-V/W24BBP5,V24BBP8
Mode		Hi	Me	Lo	Hi
Air Volume	m^3/min	**16**	**14**	**12**	**50**
Running Current	A	0.36	0.31	0.23	0.51
Power Consumption	kW	0.08	0.07	0.05	0.12
Fan Speed	r/min	412	376	325	690

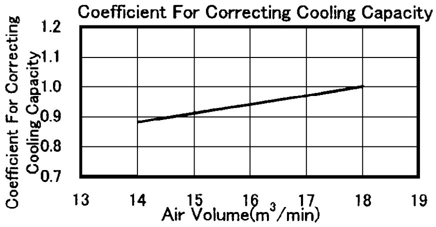




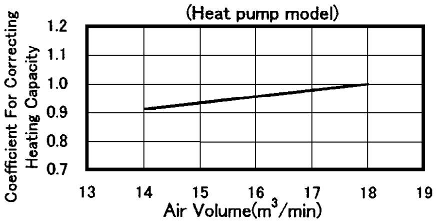
●CS-W28BB4P

ITEM \ Model		Indoor Unit			Outdoor Unit
		CS-W28BB4P			CU-V/W28BBP5.V/W28BBP8
Mode		Hi	Me	Lo	Hi
Air Volume	m^3/min	18	16	14	50
Running Current	A	0.40	0.32	0.25	0.51
Power Consumption	kW	0.09	0.07	0.05	0.12
Fan Speed	r/min	460	419	366	690

Coefficient For Correcting Cooling Capacity



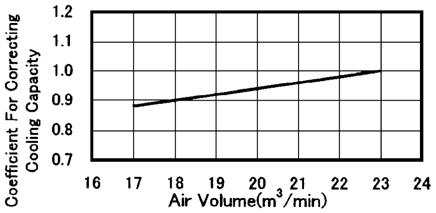
Coefficient For Correcting Heating Capacity
(Heat pump model)



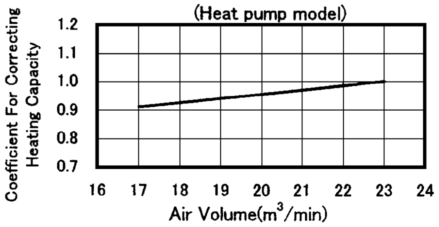
●CS-W34BB4P

ITEM \ Model		Indoor Unit			Outdoor Unit
		CS-W34BB4P			CU-V/W34BBP8
Mode		Hi	Me	Lo	Hi
Air Volume	m^3/min	23	20	17	80
Running Current	A	0.68	0.63	0.57	1.01
Power Consumption	kW	0.15	0.12	0.09	0.23
Fan Speed	r/min	557	490	414	678

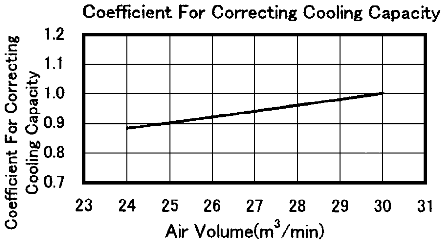
Coefficient For Correcting Cooling Capacity

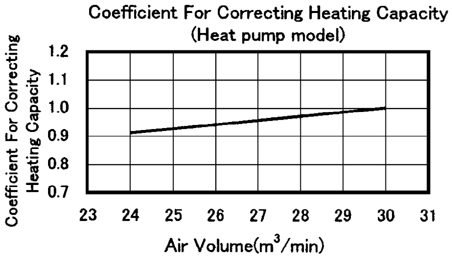


Coefficient For Correcting Heating Capacity
(Heat pump model)



ITEM \ Model		Indoor Unit			Outdoor Unit
		CS-W43BB4P			CU-V/W43BBP8
Mode		Hi	Me	Lo	Hi
Air Volume	m^3/min	30	27	24	95
Running Current	A	0.98	0.79	0.64	1.10
Power Consumption	kW	0.22	0.18	0.14	0.25
Fan Speed	r/min	752	683	608	715





13. SAFETY DEVICE

INDOOR UNIT

Indoor unit	Heat pump model Cooling only model		CS-W18BB4P	CS-W24BB4P	CS-W28BB4P	CS-A34BB4P	CS
For Fan Motor Protection, Internal Protector (49F)	OFF	°C	135	135	135	135	
	ON	°C	85	85	85	85	
For Control Protection, Fuse	CUT	A	3.15	3.15	3.15	3.15	

OUTDOOR UNIT

Outdoor Unit	Heat pump model	50Hz	CU- / W18BBP	CU- / W24BBP	-	CU- / W28BBP	CU- / W28BBP	CU- / W34BBP8
	Cooling / only model	50Hz	CU- / V18BBP	CU- / V24BBP	CU- / V24BBP	CU- / V28BBP	CU- / V28BBP	CU- / V34BBP8
		60Hz	-	-	-	-	-	-
For Refrigerant Cycle, High Pressure Switch (63H$_1$)	OFF	MPa (*1)	3.1	3.1	3.1	3.1	3.1	3.1
	ON	MPa (*1)	2.3	2.3	2.3	2.3	2.3	2.3
For Compressor Over Current Protection	OFF (Heat pump)	A	15	17	-	23	8	11
	OFF (Cooling only model)	A 50Hz	15	17	7	23	8	11
		A 60Hz	-	-	-	-	-	-
	RESET	-	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Discharge Temp. Protection, Discharge Temp. Thermistor (Th1)	Compressor OFF	°C	115	115	115	120	120	120
Liquid Compression Protection, Crankcase Heater	Input power	W	26~31	31~37	31~37	31~37	31~37	34~41
Compressor Protection, Internal Protector	OFF	°C 50Hz	150	160	120 (*2)	160	120 (*2)	145
		°C 60Hz	-	-	-	-	-	-
	ON	°C 50Hz	90	90	90 (*2)	90	90(*2)	61
		°C 60Hz	-	-	-	-	-	-
	Trip time	50Hz	3-10sec/ / 52A	5-15sec/ / 74A	-	5-15sec/ / 74A	-	3-10sec/ / 37A
		60Hz	-	-	-	-	-	-

For Fan Motor Protection, Internal Protector (49F)	**OFF**	**°C**	**135**	**135**	**135**	**135**	**135**	**135**
	ON	**°C**	**85**	**85**	**85**	**85**	**85**	**85**
Heating Pressure Switch (Heat Pump Only) (Fan Speed) (63H$_2$)	**OFF**	**MPa (*1)**	**2.35**	**2.35**	**2.35**	**2.35**	**2.35**	**2.35**
	ON	**MPa (*2)**	**1.96**	**1.96**	**1.96**	**1.96**	**1.96**	**1.96**
Cooling Control, Heat Exchanger Outlet Temp. Thermistor (Th2)	**Control method**	**Th ≧ 30°C ----- High speed** **Th < 30°C ------5 speed step control**						
For Control Protection, Fuse	**CUT**	**A**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**	**6.3**

(*1) MPa = 10.2 kgf/cm^2 (*2) Head Thermostat only for CU-A28BBP8 / CU-C28BBP8

14. COMPONENT SPECIFICATION

Compressor

Models							
Models	Heat pump model		50Hz	CU-W18BBP5	CU-W24BBP5	CU-W28BBP5 CU-W28BBP8	CU-W34BBP8	W
	Cooling only model		50Hz	CU-V18BBP5	CU-V24BBP5 CU-V24BBP8	CU-V28BBP5 CU-V28BBP8	CU-V34BBP8	CU
			60Hz	-	-	-	-	
Compressor Model			single-phase	PE31VNEMT	NE41VNHMT	NE44VNHMT	ZR48KCE-TFD	Z
			3-phase	-	NE41YDNMT	NE44YDNMT	-	
Compressor Type				ROTARY			SCROL	
No. of Cylinders				1	1	1	1	
Revolution			r/min	2,900	2,900	2,900	2,900	
Piston Diplacement			m^3/h	5.43	7.27	7.73	11.39	
Motor Type	Starting Method			Direct on-line Starting				
	Rated Output		kW	1.3	1.9	2.0	3.0	
	Poles			2	2	2	2	
	Insulation Class			E	E	E	E	
Oil	Type			MEL56	MEL56	MEL56	MMMAPOE	M
	Charge		L	0.7	1.3	1.3	1.3	

Evaporator

	Models		CS-W18BB4P	CS-W24BB4P	CS-W28BB4P	CS-W34BB4P	W
	Tube Material		Copper tube				
	Outer Diameter	mm	7.0	7.0	7.0	7.0	
	Thickness	mm	0.27	0.27	0.27	0.27	
	Row		2	2	2	2	
	No. of Tubes/ Row		8	8	8	12	
	Fin Material		Aluminium				
	Thickness	mm	0.105	0.105	0.105	0.105	
	Fin Pitch	NO./inch	17	17	17	19	
	Fin Surface		Z Slit fin	Z Slit fin	Z Slit fin	Z Slit fin	
	Total Face Area	m^2	0.304	0.304	0.304	0.456	
Fan	Type		Turbo fan				
	No. of /Unit		1	1	1	1	

Fan Motor	Starting Method		Direct on-line Starting			
	Rated Output	kW	0.02	0.03	0.03	0.05
	Poles		6	6	6	6
	Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase
	Insulation Class		E	E	E	E

Condenser

Models		Heat pump model	CU-W18BBP5	CU-W24BBP5	CU-W28BBP5 CU-W28BBP8	CU-W34BBP8	W4
		Cooling only model	CU-V18BBP5	CU-V24BBP5 CU-V24BBP8	CU-V28BBP5 CU-V28BBP8	CU-V34BBP8	CU-
	Tube Material		Copper tube				
	Outer Diameter	mm	9.52	9.52	9.52	9.52	
	Thickness	mm	0.3	0.3	0.3	0.3	
	Row		2	2	2	2	
	No. of Tubes/Row		34	34	34	46	
	Fin Material		Aluminium				
	Thickness	mm	0.105	0.105	0.105	0.105	
	Fin Pitch	NO./inch	14	14	14	14	
	Fin Surface		X-Louvre fin	X-Louvre fin	X-Louvre fin	X-Louvre fin	X-L
	Total Face Area	m2	0.61	0.61	0.61	0.82	
Fan	Type		Propeller Fan				
	No.of /Unit		1	1	1	2	
Fan Motor	Starting Method		Direct on-line Starting				
	Rated Output	kW	0.05	0.055	0.055	0.055 x 2	0.
	Poles		6	6	6	6	
	Phase		Single-Phase	Single-Phase	Single-Phase	Single-Phase	Sing
	Insulation Class		E	E	E	E	

15. CAPACITY AND POWER CONSUMPTION

15.1. HEATING PERFORMANCE

Model	Heating capacities are based on conditions below.
CS-W18BB4P CU-W18BBP5	● 1 phase, 50Hz, 230V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 14m3/min
Heating capacity 5.6 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
14m3/min	15	4.09	1.32	4.90	1.50	5.88	1.79	6.83	2.11
	20	3.86	1.39	4.62	1.60	5.60	1.88	6.72	2.18
	25	3.64	1.47	4.37	1.69	5.32	1.97	6.44	2.23

Model	Heating capacities are based on conditions below.
CS-W24BB4P CU-W24BBP5	● 1 phase, 50Hz, 230V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 17m3/min
Heating capacity 7.1 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
16m3/min	15	5.18	1.82	6.21	2.08	7.46	2.47	8.66	2.91
	20	4.90	1.92	5.86	2.21	7.10	2.60	8.52	3.02
	25	4.62	2.03	5.54	2.34	6.75	2.73	8.17	3.08

Model	Heating capacities are based on conditions below.
CS-W28BB4P CU-W28BBP5	● 1 phase, 50Hz, 230V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 19m3/min
Heating capacity 8.0 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
18m3/min	15	5.84	2.11	7.00	2.42	8.40	2.87	9.76	3.38
	20	5.52	2.23	6.60	2.57	8.00	3.02	9.60	3.50
	25	5.20	2.36	6.24	2.72	7.60	3.17	9.20	3.54

Model	Heating capacities are based on conditions below.
CS-W28BB4P CU-W28BBP8	● 3 phase, 50Hz, 400V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 19m3/min
Heating capacity 8.0 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
18m3/min	15	5.84	2.00	7.00	2.29	8.40	2.72	9.76	3.20
	20	5.52	2.12	6.60	2.43	8.00	2.86	9.60	3.32
	25	5.20	2.23	6.24	2.57	7.60	3.00	9.20	3.36

Model	Heating capacities are based on conditions below.
CS-W34BB4P CU-W34BBP8	● 3 phase, 50Hz, 400V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 24m3/min
Heating capacity 11.2 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
23m3/min	15	8.18	2.85	9.80	3.26	11.8	3.87	13.7	4.56
	20	7.73	3.01	9.24	3.46	11.2	4.07	13.4	4.72
	25	7.28	3.17	8.74	3.66	10.6	4.27	12.9	4.92

Model	Heating capacities are based on conditions below.
CS-W43BB4P CU-W43BBP8	● 3 phase, 50Hz, 400V / ● Indoor temperature 20°C D.B.T. / ● Outdoor temperature 7°C D.B. 6°C W.B.T. / ● Standard air volume 32m3/min
Heating capacity 14.0 kW	

Inlet Air		Outdoor Temperature(°C W.B.T.)							
External Static Presser (Pa) Air Volume (m3/min)	Entering Air D.B.T. (°C)	-6°C		0°C		6°C		12°C	
		H.C.	IPT	H.C.	IPT	H.C.	IPT	H.C.	IPT
30m3/min	15	10.22	3.26	12.25	3.73	14.7	4.43	17.1	5.22
	20	9.66	3.45	11.55	3.96	14.0	4.66	16.8	5.41
	25	9.10	3.63	10.92	4.19	13.3	4.89	16.1	5.58

15.2. COOLING PERFORMANCE

CS-W18BB4P

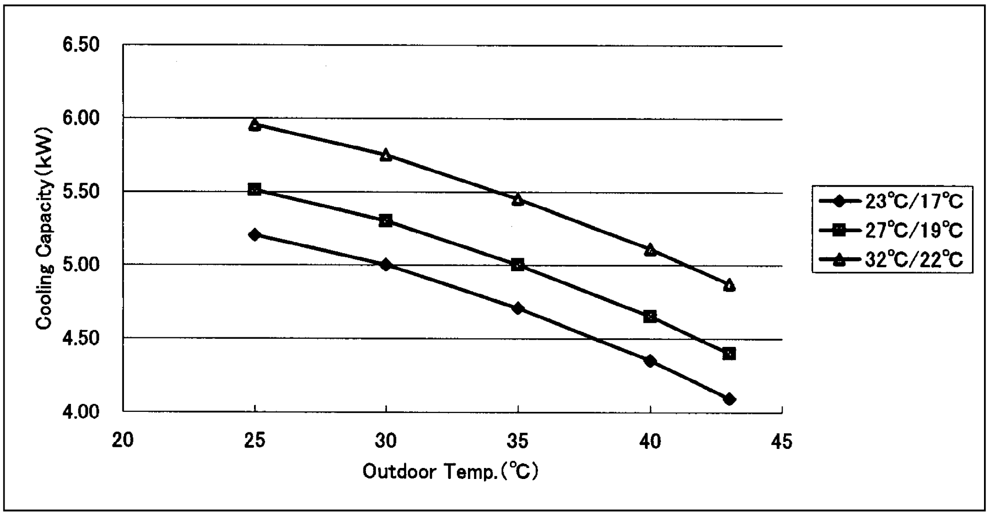
Model	Cooling capacities are based on conditions below.
CS-W18BB4P	● 1 phase, 50Hz, 230V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 14m3/min
Cooling capacity 5.0 kW	

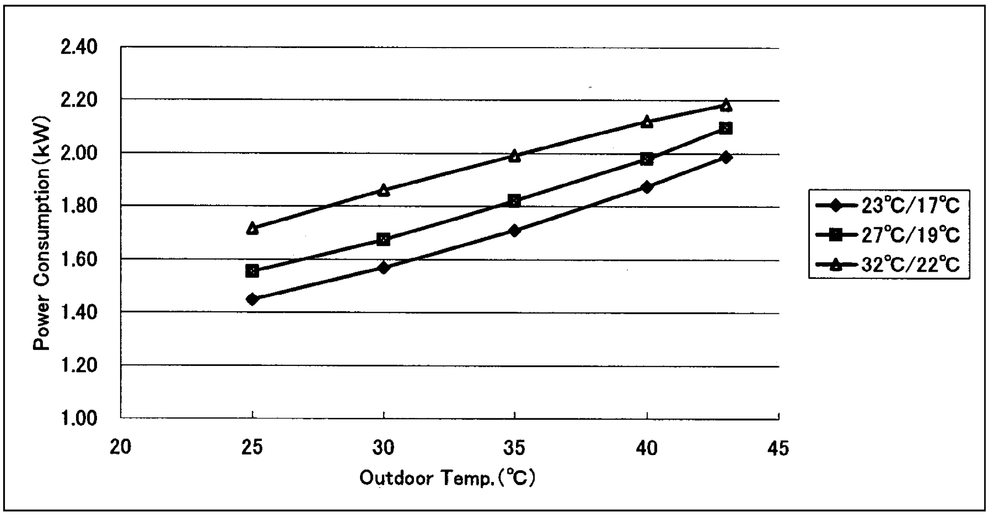
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T.	W.B.T.	kW	kW	kW	kW	kW
23	17	5.21	5.00	4.71	4.35	4.10
	19	5.50	5.33	5.05	4.71	4.47
	22	6.00	5.84	5.57	5.22	4.97
25	17	5.14	4.94	4.66	4.32	4.08
	19	5.50	5.31	5.03	4.68	4.44
	22	6.00	5.82	5.53	5.15	4.92
27	17	5.08	4.89	4.61	4.29	4.06
	19	5.51	5.30	5.00	4.65	4.40
	22	5.99	5.79	5.49	5.10	4.88
29	17	5.07	4.89	4.60	4.32	4.11
	19	5.50	5.30	5.00	4.69	4.45
	22	5.97	5.77	5.45	5.11	4.87
32	17	5.06	4.89	4.28	4.34	4.14
	19	5.49	5.30	5.00	4.71	4.49
	22	5.96	5.75	5.45	5.11	4.87

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°C			
		25	30	35	40
		IPT	IPT	IPT	IPT
D.B.T.	W.B.T.	kW	kW	kW	kW
23	17	1.45	1.57	1.71	1.8
	19	1.54	1.66	1.81	1.9
	22	1.66	1.80	1.96	2.1
25	17	1.45	1.57	1.71	1.8
	19	1.54	1.67	1.82	1.9
	22	1.67	1.80	1.96	2.1
27	17	1.45	1.57	1.70	1.8
	19	1.55	1.67	1.82	1.9
	22	1.68	1.81	1.97	2.1
29	17	1.44	1.56	1.68	1.8
	19	1.54	1.67	1.80	1.9
	22	1.70	1.84	1.98	2.1
32	17	1.44	1.56	1.67	1.7
	19	1.54	1.67	1.78	1.9
	22	1.71	1.86	1.99	2.1





CS-W24BB4P

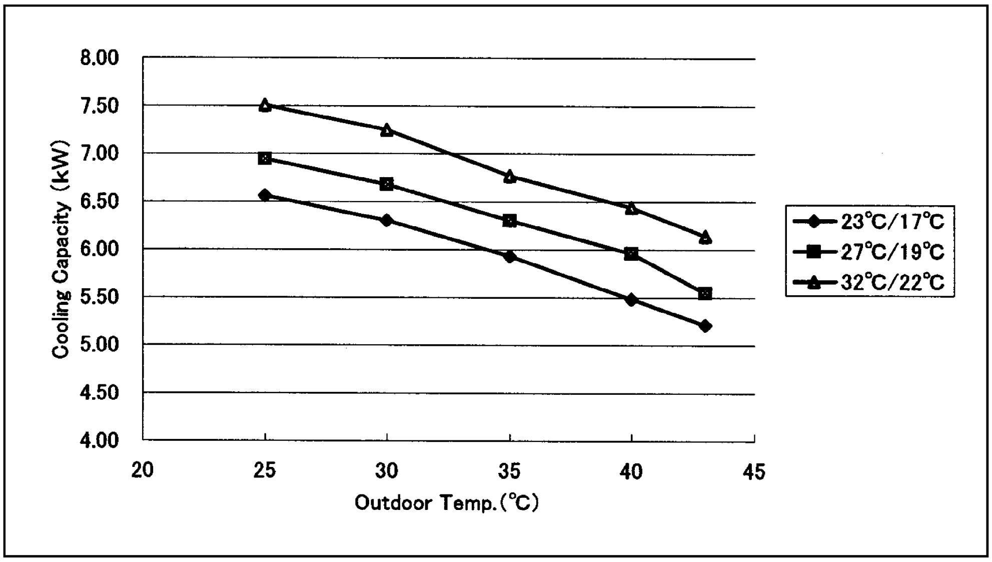
Model	Cooling capacities are based on conditions below.
CS-W24BB4P	● 1 phase, 50Hz, 230V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 16m3/min
Cooling capacity 6.3 kW	

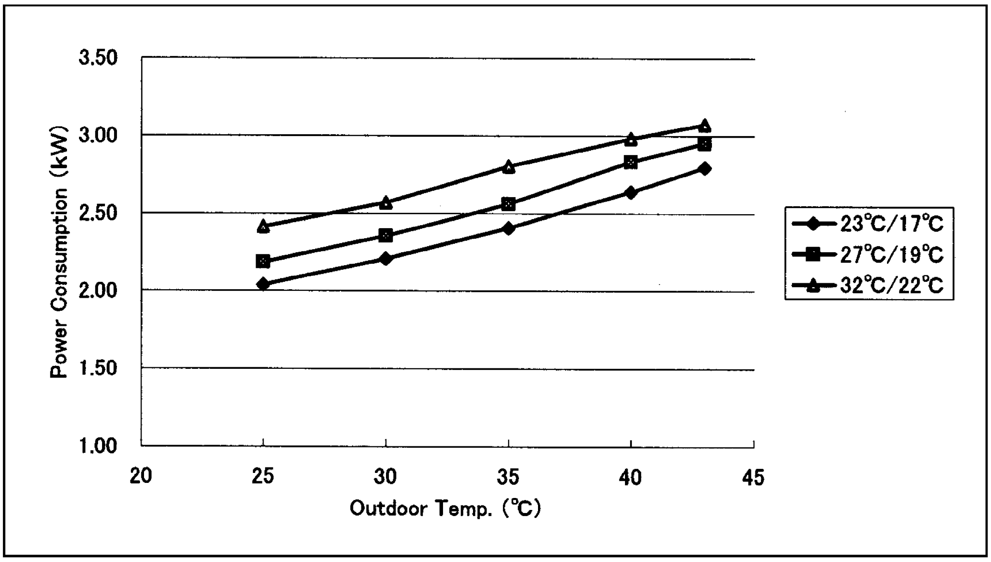
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T	W.B.T	kW	kW	kW	kW	kW
23	17	6.56	6.30	5.93	5.48	5.21
	19	6.93	6.71	6.37	5.94	5.63
	22	7.56	7.36	7.02	6.57	6.26
25	17	6.48	6.23	5.87	5.44	5.14
	19	6.93	6.69	6.33	5.90	5.59
	22	7.56	7.33	6.97	6.49	6.20
27	17	6.40	6.16	5.81	5.40	5.11
	19	6.94	6.68	6.30	5.96	5.54
	22	7.55	7.30	6.92	6.43	6.14
29	17	6.39	6.16	5.80	5.44	5.17
	19	6.93	6.68	6.30	5.91	5.61
	22	7.52	7.27	6.87	6.43	6.14
32	17	6.38	6.16	5.39	5.47	5.22
	19	6.92	6.68	6.30	5.94	5.66
	22	7.50	7.25	6.76	6.44	6.14

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°			
		25	30	35	4
		IPT	IPT	IPT	IP
D.B.T.	W.B.T.	kW	kW	kW	k
23	17	2.04	2.21	2.40	2.
	19	2.16	2.34	2.55	2.
	22	2.33	2.53	2.75	3.
25	17	2.04	2.20	2.40	2.
	19	2.17	2.35	2.55	2.
	22	2.35	2.53	2.76	3.
27	17	2.04	2.20	2.40	2.
	19	2.18	2.35	2.56	2.
	22	2.36	2.54	2.76	3.
29	17	2.03	2.20	2.37	2.
	19	2.17	2.35	2.53	2.
	22	2.39	2.59	2.79	2.
32	17	2.02	2.19	2.35	2.
	19	2.16	2.34	2.51	2.
	22	2.41	2.57	2.80	2.





CS-W24BB4P

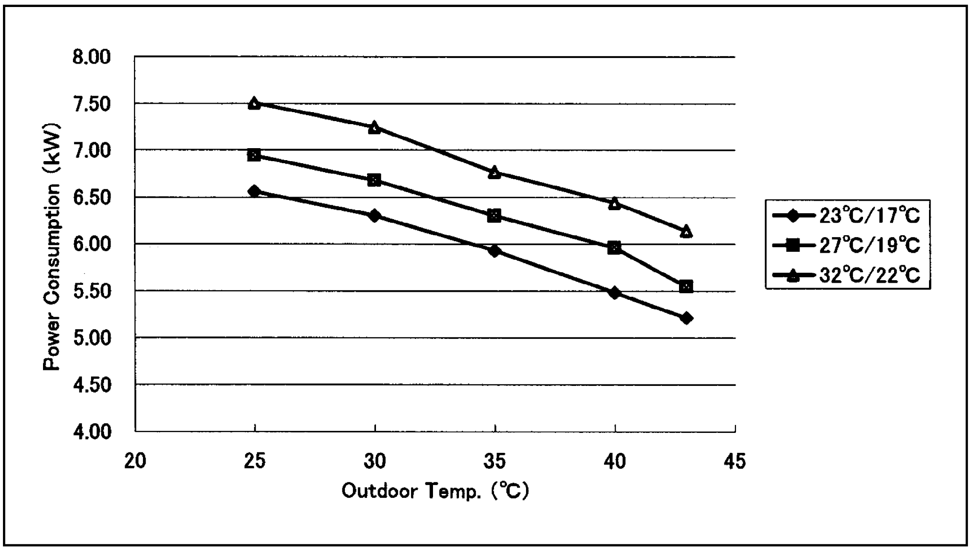
Model	Cooling capacities are based on conditions below.
CS-W24BB4P	● 3 phase, 50Hz, 230V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 16m3/min
Cooling capacity 6.3 kW	

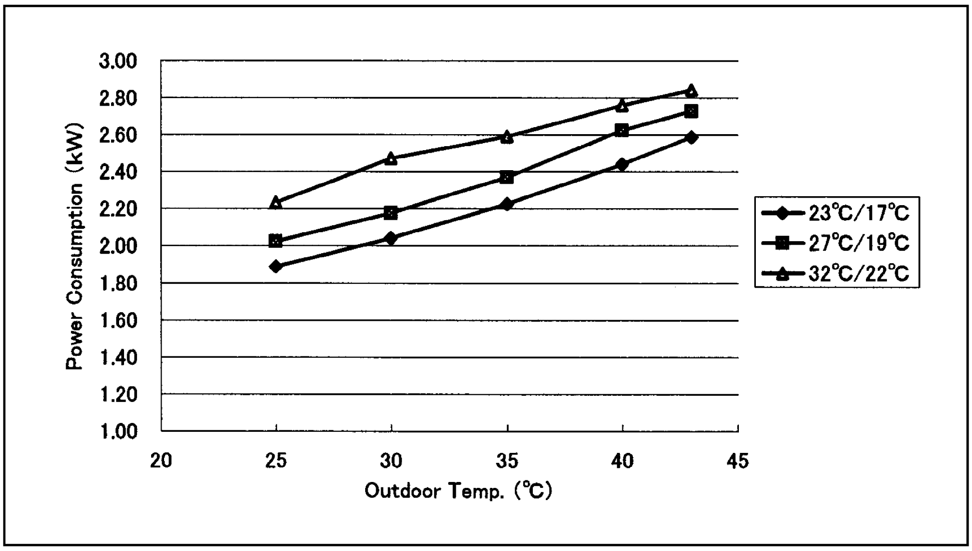
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T.	W.B.T.	kW	kW	kW	kW	kW
23	17	6.56	6.30	5.93	5.48	5.21
	19	6.93	6.71	6.37	5.94	5.63
	22	7.56	7.36	7.02	6.57	6.26
25	17	6.48	6.23	5.87	5.44	5.14
	19	6.93	6.69	6.33	5.90	5.59
	22	7.56	7.33	6.97	6.49	6.20
27	17	6.40	6.16	5.81	5.40	5.11
	19	6.94	6.68	6.30	5.96	5.54
	22	7.55	7.30	6.92	6.43	6.14
29	17	6.39	6.16	5.80	5.44	5.17
	19	6.93	6.68	6.30	5.91	5.61
	22	7.52	7.27	6.87	6.43	6.14
32	17	6.38	6.16	5.39	5.47	5.22
	19	6.92	6.68	6.30	5.94	5.66
	22	7.50	7.25	6.76	6.44	6.14

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°			
		25	30	35	4
		IPT	IPT	IPT	IP
D.B.T.	W.B.T.	kW	kW	kW	k
23	17	1.89	2.04	2.23	2.4
	19	2.00	2.17	2.36	2.5
	22	2.16	2.34	2.55	2.7
25	17	1.89	2.04	2.22	2.4
	19	2.01	2.17	2.36	2.5
	22	2.17	2.35	2.55	2.7
27	17	1.89	2.04	2.22	2.4
	19	2.02	2.18	2.37	2.6
	22	2.18	2.35	2.56	2.7
29	17	1.88	2.03	2.19	2.3
	19	2.01	2.17	2.34	2.5
	22	2.21	2.39	2.58	2.7
32	17	1.87	2.03	2.17	2.3
	19	2.00	2.17	2.32	2.4
	22	2.23	2.47	2.59	2.7





CS-W28BB4P

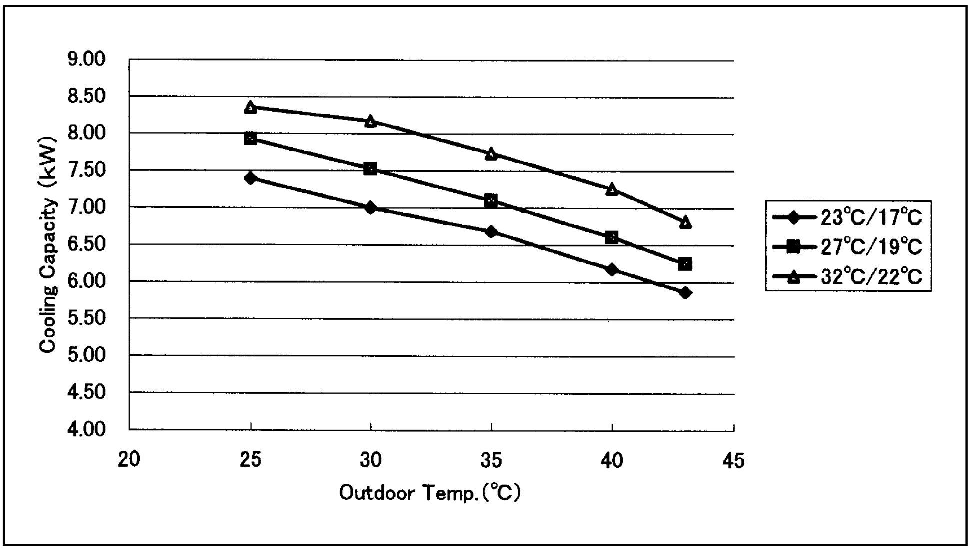
Model	Cooling capacities are based on conditions below.
CS-W28BB4P	● 1 phase, 50Hz, 230V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 18m3/min
Cooling capacity 7.1 kW	

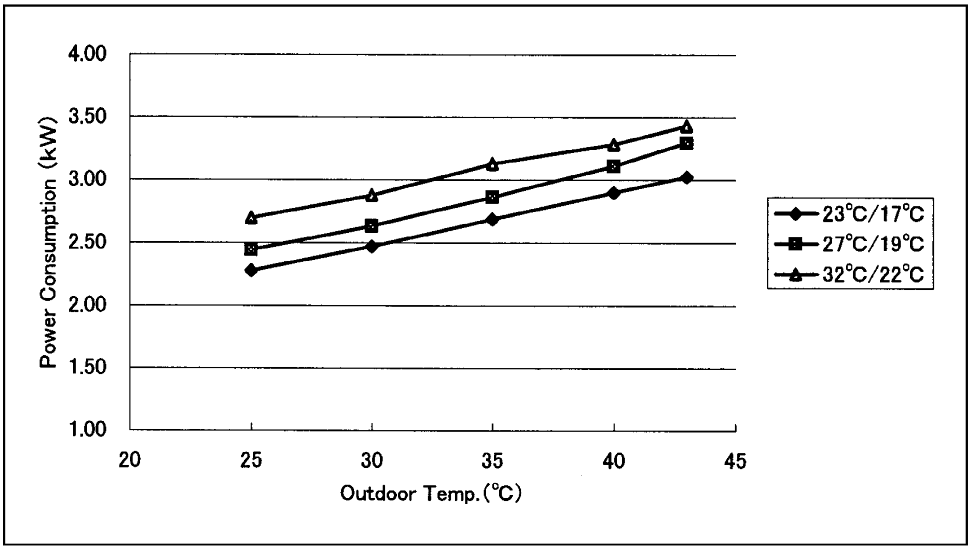
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C.D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T.	W.B.T.	kW	kW	kW	kW	kW
23	17	7.39	7.00	6.68	6.18	5.86
	19	7.81	7.56	7.18	6.69	6.35
	22	8.52	8.29	7.91	7.41	7.05
25	17	7.30	7.02	6.61	6.13	5.79
	19	7.81	7.54	7.14	6.65	6.30
	22	8.52	8.26	7.86	7.32	6.99
27	17	7.21	6.94	6.55	6.09	5.76
	19	7.92	7.53	7.10	6.60	6.25
	22	8.51	8.23	7.80	7.24	6.92
29	17	7.20	6.94	6.53	6.14	5.83
	19	7.81	7.53	7.10	6.66	6.32
	22	8.48	8.19	7.74	7.25	6.92
32	17	7.19	6.94	6.07	6.17	5.88
	19	7.80	7.53	7.10	6.69	6.38
	22	8.36	8.17	7.74	7.26	6.82

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°C			
		25	30	35	40
		IPT	IPT	IPT	IPT
D.B.T.	W.B.T.	kW	kW	kW	kW
23	17	2.28	2.47	2.69	2.9
	19	2.41	2.61	2.85	3.1
	22	2.61	2.82	3.07	3.3
25	17	2.28	2.46	2.68	2.9
	19	2.43	2.62	2.85	3.1
	22	2.62	2.83	3.08	3.3
27	17	2.28	2.46	2.68	2.9
	19	2.44	2.63	2.86	3.1
	22	2.63	2.84	3.09	3.3
29	17	2.27	2.45	2.64	2.8
	19	2.42	2.62	2.83	3.0
	22	2.67	2.89	3.11	3.3
32	17	2.26	2.45	2.62	2.7
	19	2.41	2.62	2.80	2.9
	22	2.69	2.87	3.13	3.2





CS-W28BB4P

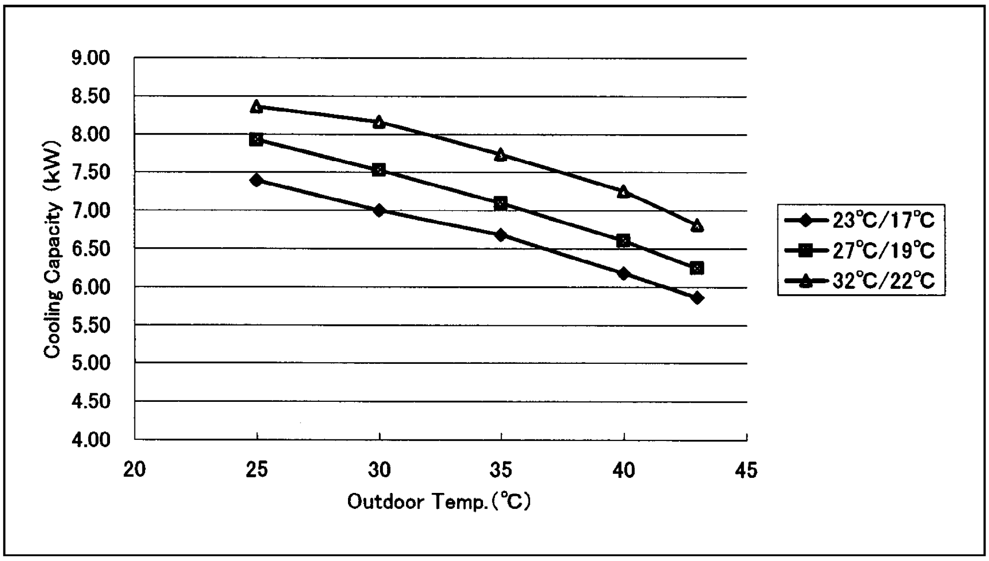
Model	Cooling capacities are based on conditions below.
CS-W28BB4P	● 3 phase, 50Hz, 230V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 18m3/min
Cooling capacity 7.1 kW	

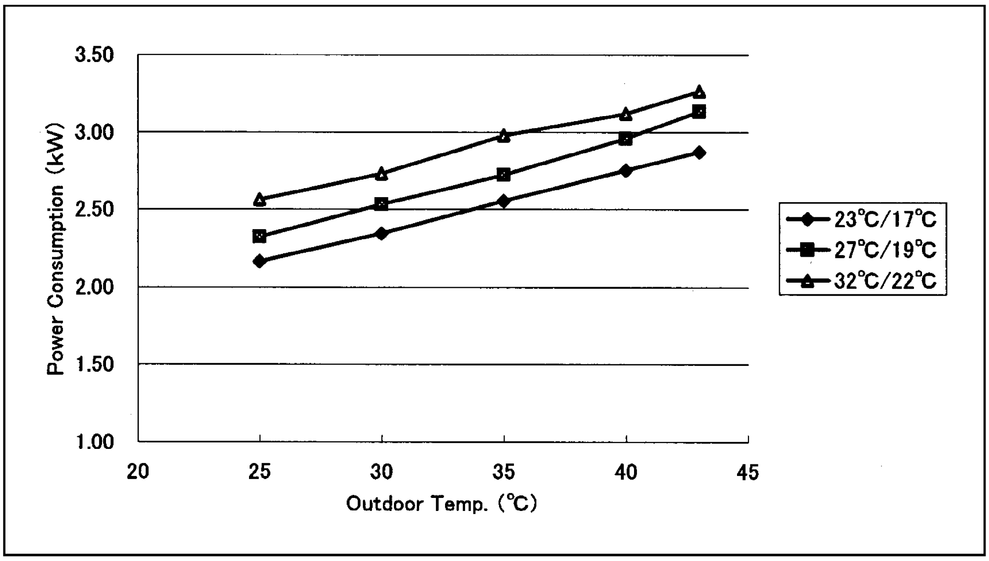
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T.	W.B.T.	kW	kW	kW	kW	kW
23	17	7.39	7.00	6.68	6.18	5.86
	19	7.81	7.56	7.18	6.69	6.35
	22	8.52	8.29	7.91	7.41	7.05
25	17	7.30	7.02	6.61	6.13	5.79
	19	7.81	7.54	7.14	6.65	6.30
	22	8.52	8.26	7.86	7.32	6.99
27	17	7.21	6.94	6.55	6.09	5.76
	19	7.92	7.53	7.10	6.60	6.25
	22	8.51	8.23	7.80	7.24	6.92
29	17	7.20	6.94	6.53	6.14	5.83
	19	7.81	7.53	7.10	6.66	6.32
	22	8.48	8.19	7.74	7.25	6.92
32	17	7.19	6.94	6.07	6.17	5.88
	19	7.80	7.53	7.10	6.69	6.38
	22	8.36	8.17	7.74	7.26	6.82

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°C			
		25	30	35	40
		IPT	IPT	IPT	IPT
D.B.T.	W.B.T.	kW	kW	kW	kW
23	17	2.17	2.34	2.55	2.7
	19	2.30	2.49	2.71	2.9
	22	2.48	2.68	2.92	3.2
25	17	2.17	2.34	2.55	2.7
	19	2.31	2.49	2.71	2.9
	22	2.49	2.69	2.93	3.2
27	17	2.17	2.34	2.55	2.7
	19	2.32	2.53	2.72	2.9
	22	2.51	2.70	2.94	3.1
29	17	2.16	2.33	2.51	2.7
	19	2.31	2.49	2.69	2.8
	22	2.54	2.75	2.96	3.1
32	17	2.15	2.33	2.49	2.6
	19	2.30	2.49	2.67	2.8
	22	2.56	2.73	2.98	3.1





CS-W34BB4P

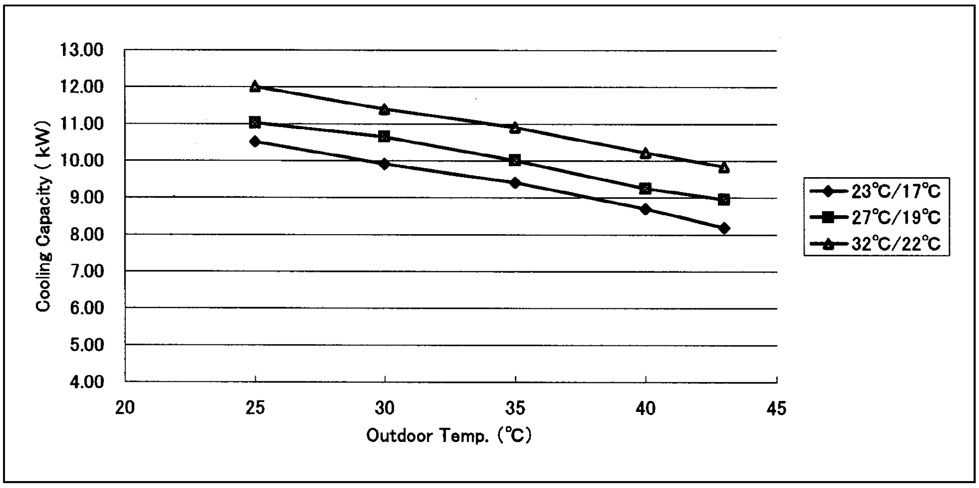
Model	Cooling capacities are based on conditions below.
CS-W34BB4P	● 3 phase, 50Hz, 400V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 23m3/min
Cooling capacity 10.0 kW	

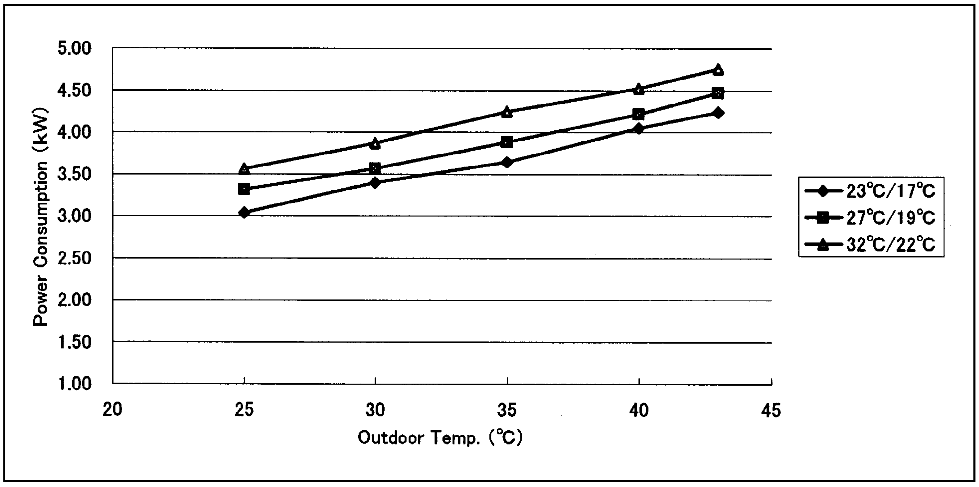
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T.	W.B.T.	kW	kW	kW	kW	kW
23	17	10.51	9.90	9.41	8.70	8.19
	19	10.99	10.65	10.11	9.42	8.94
	22	12.00	11.68	11.15	10.43	9.94
25	17	10.29	9.89	9.32	8.64	8.15
	19	11.01	10.63	10.05	9.36	8.87
	22	12.00	11.63	11.06	10.31	9.84
27	17	10.16	9.77	9.22	8.57	8.11
	19	11.02	10.65	10.00	9.25	8.95
	22	11.99	11.59	10.98	10.20	9.75
29	17	10.14	9.77	9.20	8.64	8.21
	19	11.00	10.60	10.00	9.37	8.91
	22	11.94	11.53	10.91	10.21	9.74
32	17	10.12	9.78	8.55	8.69	8.28
	19	10.98	10.60	10.01	9.42	8.98
	22	12.01	11.40	10.90	10.22	9.84

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°			
		25	30	35	40
		IPT	IPT	IPT	IPT
D.B.T.	W.B.T.	kW	kW	kW	kW
23	17	3.04	3.39	3.64	4.0
	19	3.27	3.55	3.86	4.2
	22	3.54	3.83	4.17	4.5
25	17	3.09	3.34	3.64	3.9
	19	3.29	3.56	3.87	4.2
	22	3.56	3.84	4.18	4.5
27	17	3.10	3.34	3.63	3.9
	19	3.31	3.57	3.88	4.2
	22	3.57	3.85	4.19	4.5
29	17	3.08	3.33	3.59	3.8
	19	3.29	3.56	3.83	4.1
	22	3.62	3.92	4.22	4.5
32	17	3.06	3.32	3.56	3.7
	19	3.27	3.55	3.80	4.0
	22	3.55	3.87	4.24	4.5





CS-W43BB4P

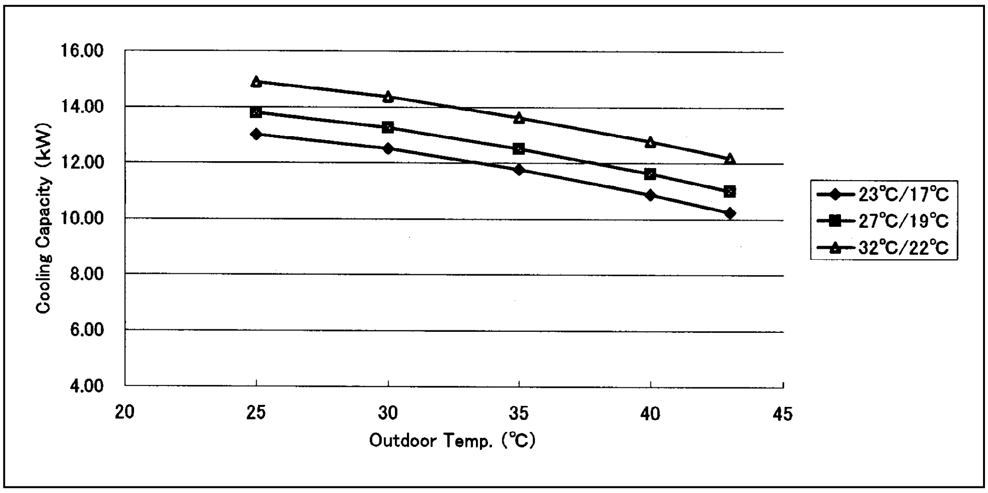
Model	Cooling capacities are based on conditions below.
CS-W43BB4P	● 3 phase, 50Hz, 400V / ● Indoor temperature 27°C D.B.T., 19°C W.B.T. / ● Outdoor temperature 35°C D.B.T. / ● Standard air volume 30m3/min
Cooling capacity 12.5 kW	

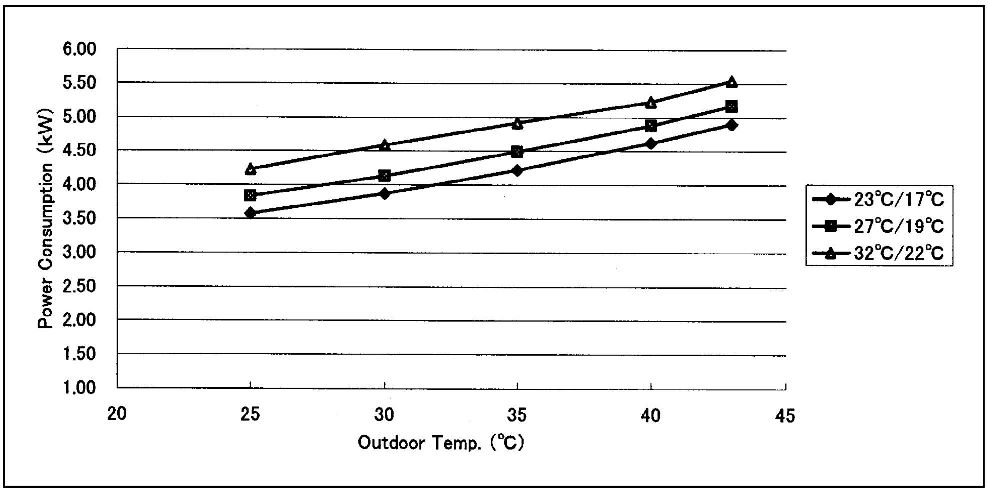
Cooling capacity

Indoor Air Temp.		Outdoor Temperature (°C D.B.T.)				
		25	30	35	40	43
		TC	TC	TC	TC	TC
D.B.T	W.B.T	kW	kW	kW	kW	kW
23	17	13.01	12.50	11.76	10.88	10.24
	19	13.74	13.31	12.63	11.78	11.18
	22	15.01	14.60	13.93	13.04	12.42
25	17	12.86	12.36	11.64	10.80	10.19
	19	13.76	13.28	12.57	11.70	11.09
	22	15.00	14.54	13.83	12.88	12.30
27	17	12.70	12.22	11.53	10.72	10.14
	19	13.78	13.25	12.50	11.63	11.00
	22	14.99	14.42	13.64	12.77	12.18
29	17	12.67	12.22	11.50	10.80	10.27
	19	13.75	13.25	12.50	11.72	11.14
	22	14.93	14.42	13.64	12.77	12.18
32	17	12.66	12.22	10.69	10.86	10.35
	19	13.73	13.25	12.51	11.78	11.23
	22	14.89	14.38	13.62	12.78	12.18

Cooling power consumption

Indoor Air Temp.		Outdoor Temperature (°C			
		25	30	35	40
		IPT	IPT	IPT	IPT
D.B.T.	W.B.T.	kW	kW	kW	kW
23	17	3.57	3.87	4.22	4.6
	19	3.79	4.10	4.47	4.9
	22	4.09	4.43	4.83	5.2
25	17	3.58	3.87	4.21	4.6
	19	3.81	4.11	4.48	4.8
	22	4.11	4.44	4.84	5.2
27	17	3.58	3.86	4.20	4.5
	19	3.83	4.13	4.49	4.8
	22	4.14	4.46	4.85	5.2
29	17	3.56	3.85	4.15	4.4
	19	3.81	4.12	4.44	4.7
	22	4.19	4.54	4.89	5.2
32	17	3.55	3.85	4.12	4.3
	19	3.79	4.11	4.40	4.6
	22	4.23	4.59	4.91	5.2





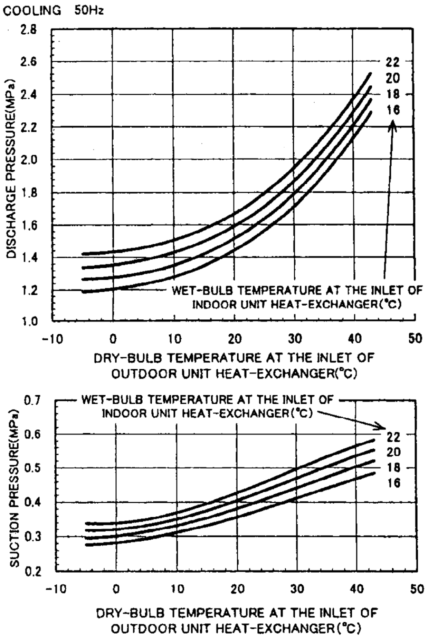
16. DISCHARGE AND SUCTION PRESSURE

16.1. SATURATION TEMPERATURE OF DISCHARGE AND SUCTION PRESSURE

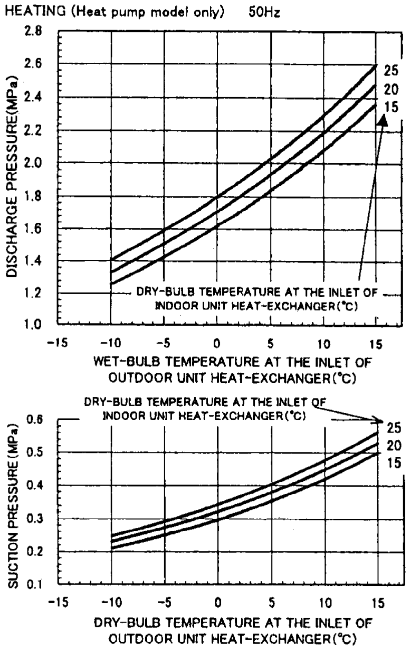
- **Commonness TO ALL THE MODELS**

- **SATURATION TEMPERATURE OF DISCHARGE AND SUCTION PRESSURE**

SATURATION OF DISCHARGE AND SUCTION PRESSURE



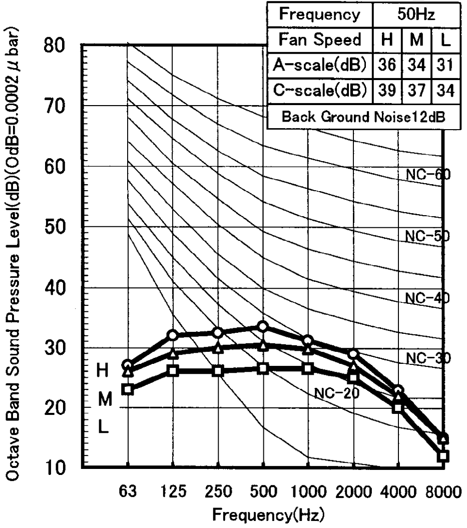
SATURATION OF DISCHARGE AND SUCTION PRESSURE



*** For intake temperature, consult the pressure - Enthalpy Table (R407C) at the end.**

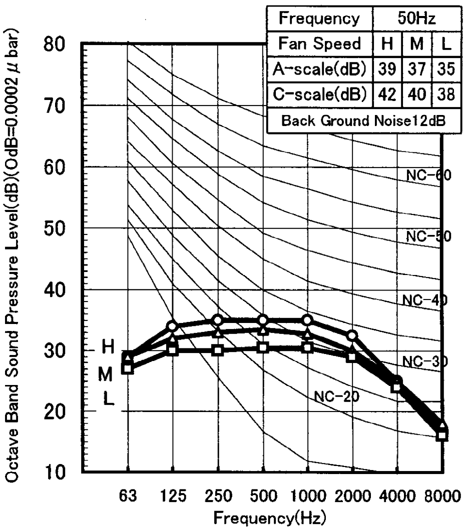
17. SOUND DATA

CS-W18BB4P
Octave Band Central Frequency(Hz)



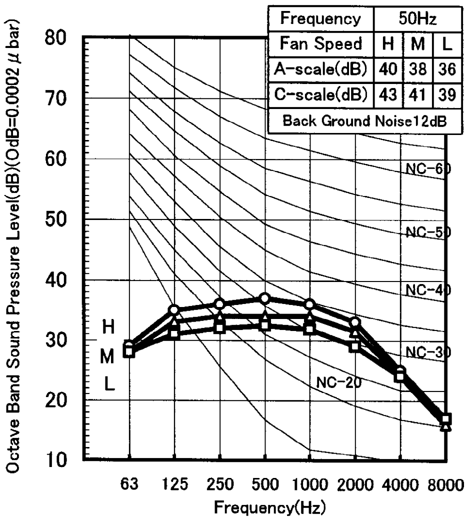
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	36	34	31
C-scale(dB)	39	37	34
Back Ground Noise12dB			

CS-W24BB4P
Octave Band Central Frequency(Hz)



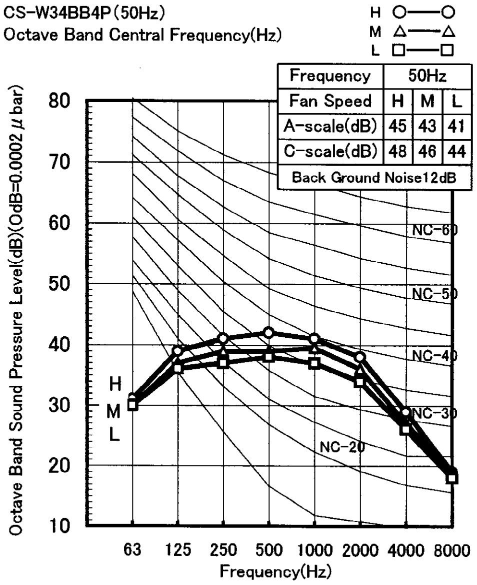
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	39	37	35
C-scale(dB)	42	40	38
Back Ground Noise12dB			

CS-W28BB4P(50Hz)
Octave Band Central Frequency(Hz)



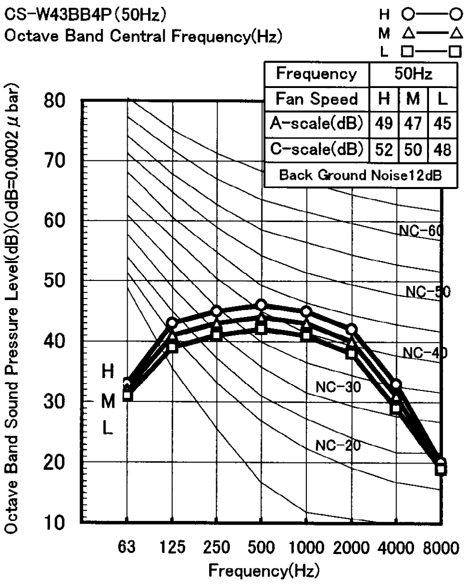
Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	40	38	36
C-scale(dB)	43	41	39
Back Ground Noise12dB			

CS-W34BB4P(50Hz)
Octave Band Central Frequency(Hz)



Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	45	43	41
C-scale(dB)	48	46	44
Back Ground Noise12dB			

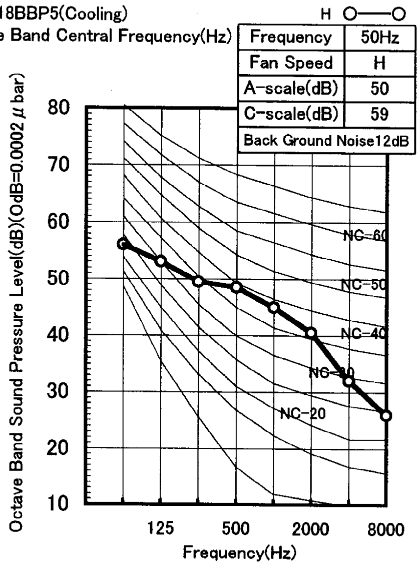
CS-W43BB4P(50Hz)
Octave Band Central Frequency(Hz)



Frequency	50Hz		
Fan Speed	H	M	L
A-scale(dB)	49	47	45
C-scale(dB)	52	50	48
Back Ground Noise12dB			

CU-W18BBP5(Cooling)

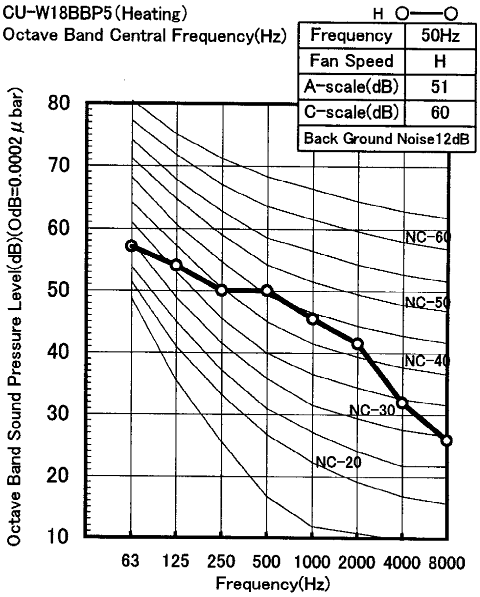
Octave Band Central Frequency(Hz)



Frequency	50Hz
Fan Speed	H
A-scale(dB)	50
C-scale(dB)	59
Back Ground Noise12dB	

CU-W18BBP5(Heating)

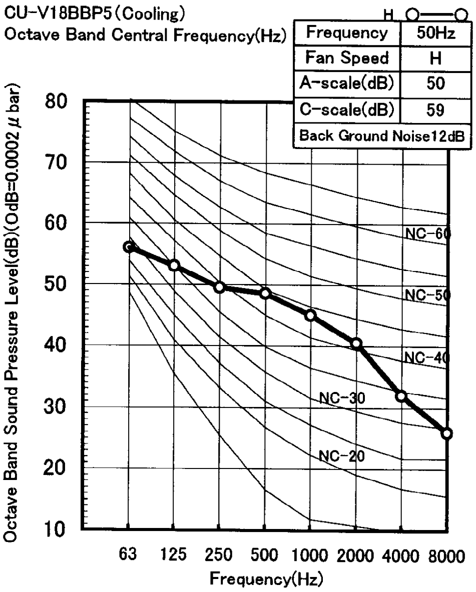
Octave Band Central Frequency(Hz)



Frequency	50Hz
Fan Speed	H
A-scale(dB)	51
C-scale(dB)	60
Back Ground Noise12dB	

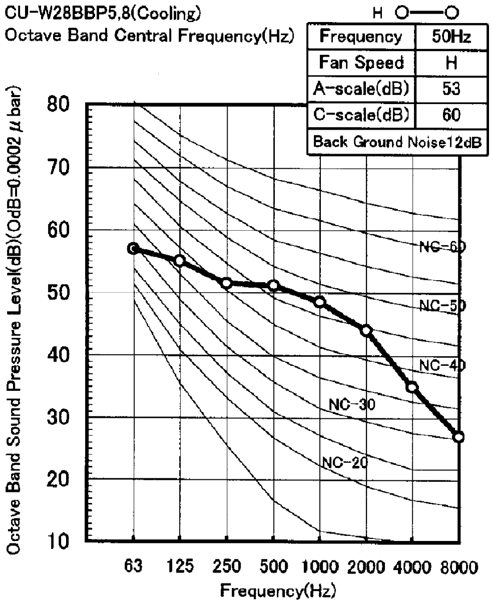
CU-V18BBP5(Cooling)

Octave Band Central Frequency(Hz)



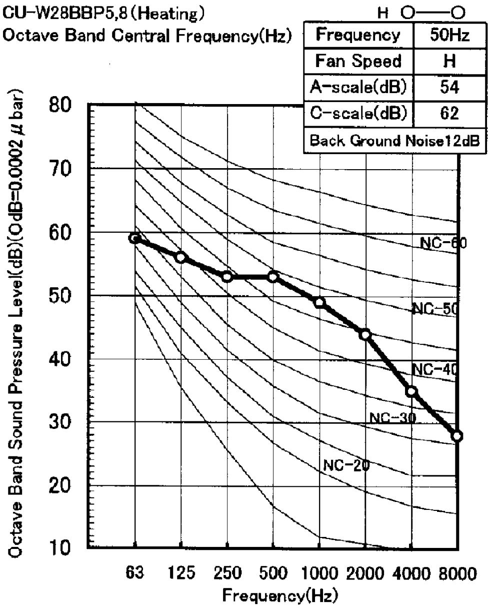
Frequency	50Hz
Fan Speed	H
A-scale(dB)	50
C-scale(dB)	59
Back Ground Noise12dB	

CU-W28BBP5,8(Cooling)



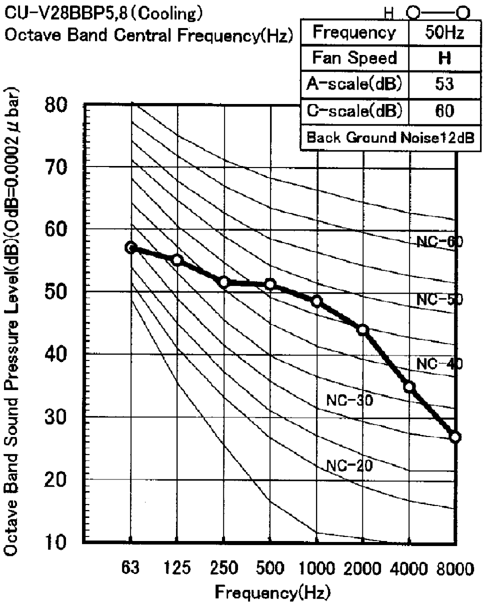
Frequency	50Hz
Fan Speed	H
A-scale(dB)	53
C-scale(dB)	60
Back Ground Noise12dB	

CU-W28BBP5,8 (Heating)



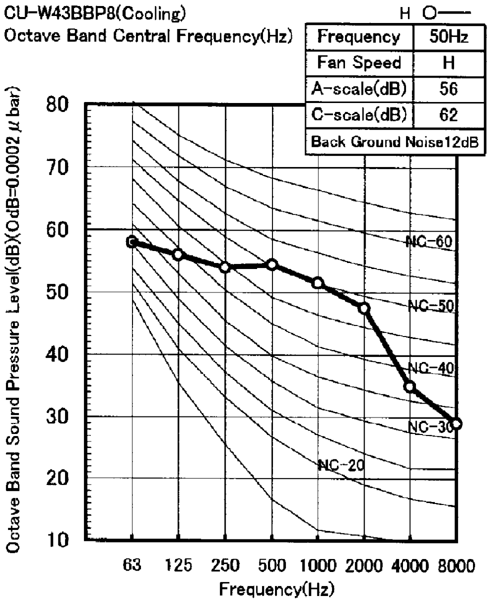
Frequency	50Hz
Fan Speed	H
A-scale(dB)	54
C-scale(dB)	62
Back Ground Noise12dB	

CU-V28BBP5,8 (Cooling)



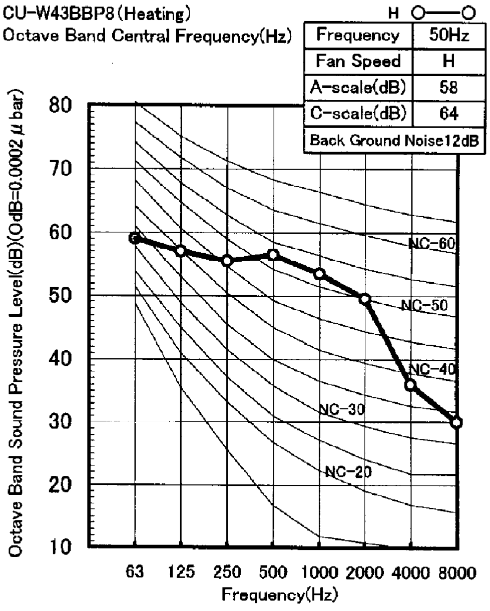
Frequency	50Hz
Fan Speed	H
A-scale(dB)	53
C-scale(dB)	60
Back Ground Noise12dB	

CU-W43BBP8(Cooling)
Octave Band Central Frequency(Hz)



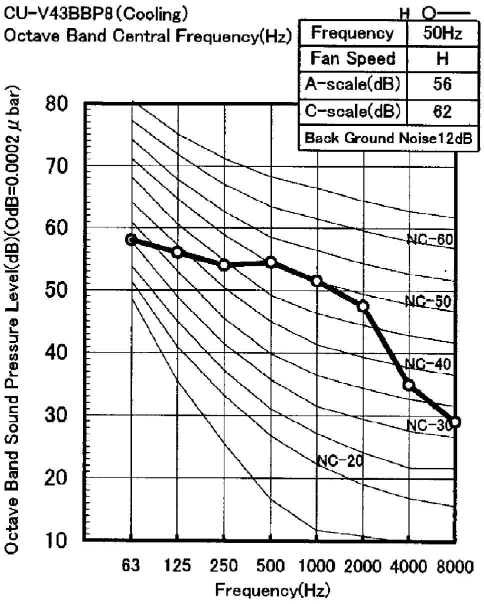
Frequency	50Hz
Fan Speed	H
A-scale(dB)	56
C-scale(dB)	62
Back Ground Noise12dB	

CU-W43BBP8(Heating)
Octave Band Central Frequency(Hz)

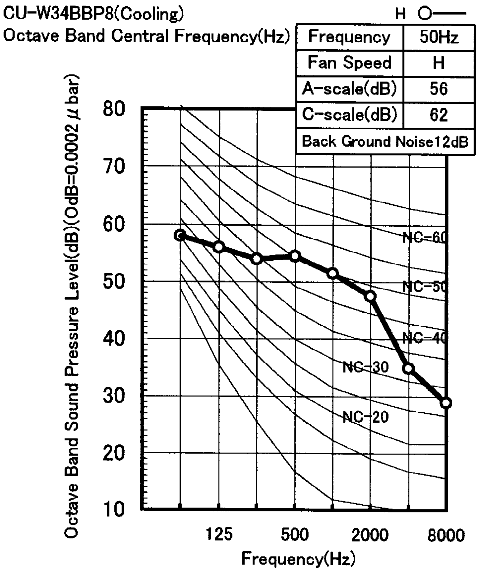


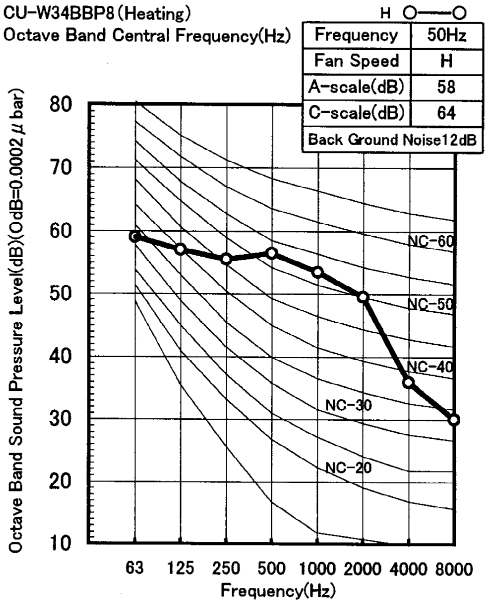
Frequency	50Hz
Fan Speed	H
A-scale(dB)	58
C-scale(dB)	64
Back Ground Noise12dB	

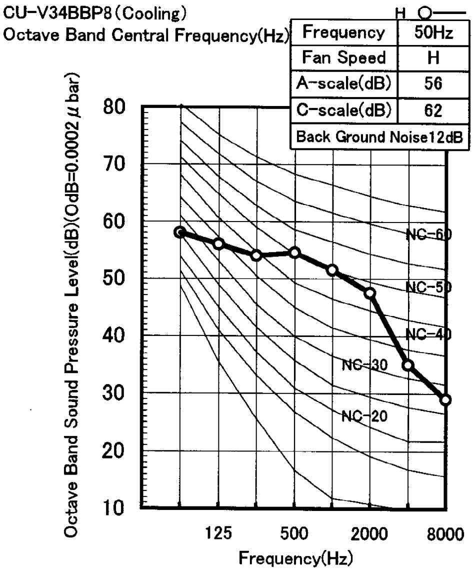
CU-V43BBP8(Cooling)
Octave Band Central Frequency(Hz)



Frequency	50Hz
Fan Speed	H
A-scale(dB)	56
C-scale(dB)	62
Back Ground Noise12dB	


CU-W34BBP8(Cooling)


CU-W34BBP8(Heating)


CU-V34BBP8(Cooling)

18. TWIN AND TRIPLE

18.1. Twin and Triple Operation

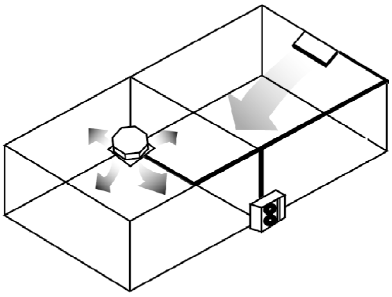
- Simultaneous air conditioning of wide spaces and corners is possible. Indoor units with different horsepowers can even be used in combination.
- Master unit and slave-units can be set automatically in twin and triple systems. No address setting is necessary.
- Multiple indoor units can be operated simultaneously with a single remote control unit. Note that individual operation is not possible.

Twin and Triple Combination Table

Outdoor unit	Simultaneous twin operation		Simultaneous triple operation	
	Standard	Horsepower difference	Standard	Horsepower difference
3.0 HP	3.0 1.5 1.5			
4.0 HP	4.0 2.0 2.0	4.0 1.5 2.5		
5.0 HP	5.0 2.5 2.5	5.0 2.0 3.0		
6.0 HP	6.0 3.0 3.0	6.0 2.0 4.0	6.0 2.0 2.0 2.0	6.0 1.5 1.5 3.0

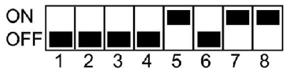
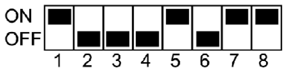
▩ : Outdoor unit capacity

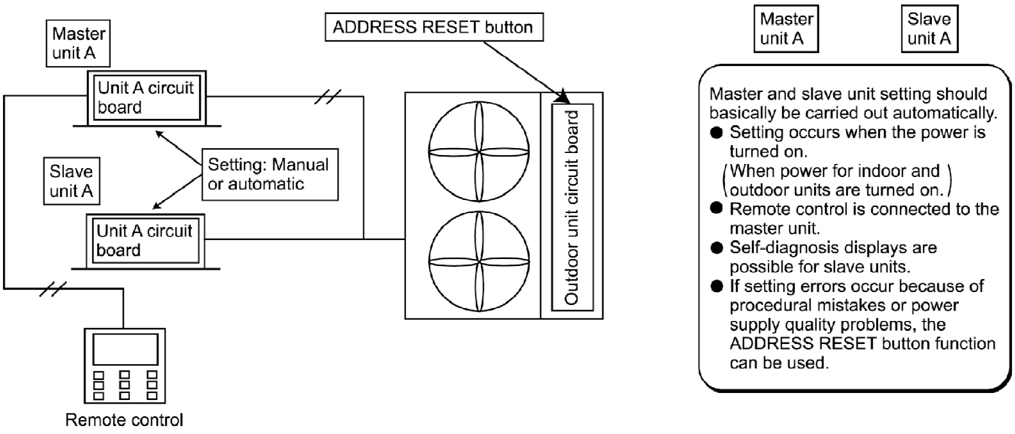
□ : Indoor unit capacity



18.1.1. Twin and triple operation setting

- The master unit and slave units are set automatically when the power is turned on. At this time, the indoor unit which is connected to the remote control unit becomes the master unit. / (If automatic setting is not possible, carry out the settings manually.)
- No distinction is made between master unit and slave units (slave unit 1 and slave unit 2) at the indoor unit or remote control.
- Install the remote control to the master unit. (It cannot be connected to slave units.) / If indoor unit models with louvres and models without louvres have been connected together, use an indoor unit with louvres as the master unit.
- The remote control termostat can also be set.
- Optional circuit boards can only be installed to the master unit.
- Setting the master unit and slave units can also be carried out manually by using DIP switches. However, manual settings will always take priority. If you have made manual settings but would like to return to using automatic settings, set all slave unit DIP switches (refer to the table below) to the OFF position, and then press the ADDRESS RESET button on the outdoor unit (SW3 on the outdoor unit printed circuit board). / (Do not mix manual settings and automatic settings.)

	Master unit	**Slave unit**	
		Slave unit 1 when connecting a triple system	**Slave unit 2 when connecting a triple system**
Manual setting	● It is not necessary to operate any switches on the master unit. The unit connected to the remote control will become the master unit.	 Set No. 8 to ON. All other switches can be ignored. (No. 5 and 7 are already set to ON at the time of shipment.)	 Set No. 1 and No. 8 to ON. (No. 5 and 7 are already set to ON at the time of shipment.)


Master unit A
Unit A circuit board
Slave unit A
Setting: Manual or automatic
Unit A circuit board
Remote control
ADDRESS RESET button
Outdoor unit circuit board
Master unit A
Slave unit A

Master and slave unit setting should basically be carried out automatically.

- Setting occurs when the power is turned on. (When power for indoor and outdoor units are turned on.)
- Remote control is connected to the master unit.
- Self-diagnosis displays are possible for slave units.
- If setting errors occur because of procedural mistakes or power supply quality problems, the ADDRESS RESET button function can be used.

18.1.2. Automatic address setting for twin and triple systems

Procedure:

Turn on the power supply for the indoor and outdoor units.

Operation:

Automatic address setting will start 10 to 30 seconds after the power supply is turned on, and will be completed after about 1 minute.

If the power supplies for the indoor unit and outdoor unit cannot be turned on at the same time, turn on the power supply for the outdoor unit, the indoor unit which is connected to the remote control, and then the other indoor units in that order.

If the order of turning on the power supply is incorrect, the master unit setting may overlap. In such a case, turn on the power supplies for all units in the correct order as given above, or carry out a twin/triple automatic address reset (press dip switch 3 on the outdoor unit continuously for 4 seconds or longer).

- **The indoor unit which is connected to the remote control will have priority for becoming the master unit.**
- **The master unit thermostat will be used as the indoor temperature thermostat. If the master unit thermostat is turned on, the slave unit thermostats cannot be adjusted even if they happen to be on.**
- **If address setting using the DIP switches is carried out after automatic address setting has been carried out, use DIP switch**

No. 3 (SW3) on the outdoor unit to carry out automatic address resetting.

- If you would like to designate a particular indoor unit as the master unit because no master unit has been set, use the DIP switches on the slave units to make setting.

If automatic address setting is carried out once and then the slave unit address are set, the address will then be stored inside the EEPROM. Thus it is not necessary to repeat automatic address setting if the power is turned off and back on again.

18.1.3. DIP switch settings for twin/triple slave unit addresses

Procedure:

Turn off the power supply, and then set DIP switch 1-8 to ON. / The unit will become slave unit 1. / (Set DIP switches 1-1 and 1-8 both to ON. / The unit will become slave unit 2.) / Turn on the power supply.

Operation:

The unit will operate as slave unit 1. Automatic address setting is not carried out at this time.

If the setting is made while the power is still turned on, it is easier to mis-combine the setting with group settings. So, the setting should be made while the power is turned off.

- Only slave unit addresses can be set in this way. Master unit setting is not possible.
- If you make the DIP switch settings after the power has been turned on, carry out twin/triple automatic address resetting.
- Be sure to set DIP switch 1-8 to ON when setting twin/triple addresses. If DIP switch 1-1 is set to ON without setting 1-8 to ON, group addresses will be set instead, and the remote control open circuit error code (F26) will be displayed.

18.1.4. Automatic address resetting for twin/triple systems

Function:

- This reset the current twin/triple addresses which have been set automatically, and result in the reoccurance of automatic twin/

triple address settings.

Procedure:

Press the ADDRESS RESET button SW3 (push button switch) on the outdoor unit circuit board continuously until LEDs 2 to 8 on the outdoor unit circuit board are all illuminated (takes approximately 3.5 seconds).

Operations:

The outdoor unit will reset the addresses for the indoor units which it is connected to, and will send an instruction to carry out automatic address setting again. If the indoor unit DIP switch have not been manually set for twin/triple address setting, the indoor units receive this command and clear their existing settings and carry out automatic address setting.

If an indoor unit has had its address set by the DIP switch (DIP switch 1-8 is ON), or if the remote control unit is connected to one of the indoor unit, then the addresses for those indoor units cannot be reset.

- **The indoor units will not run for approximately 1 minute while automatic twin/triple address resetting is being carried out.**
- **Do not turn off the power supply for at least 1 minute after automatic twin/triple address resetting has been carried out.**

18.2. Piping connections

- **The following table shows the pipe diameters for a twin-type system.**

Outdoor unit main pipe diameter (mm)				Indoor unit combinations			
	3HP	Indoor unit capacity (HP)		1.5	1.5		
Liquid side:	ø 9.52	Branch pipe diameter	Liquid side	ø 6.35	ø 6.35		
Gas side:	ø 15.88		Gas side	ø 12.7	ø 12.7		
	4HP	Indoor unit capacity (HP)		2.0	2.0	1.5	2.5
Liquid side:	ø 9.52	Branch pipe diameter	Liquid side	ø 6.35	ø 6.35	ø 6.35	ø 6.35
Gas side:	ø 19.05		Gas side	ø 12.7	ø 12.7	ø 12.7	ø 15.88
	5HP	Indoor unit capacity (HP)		2.5	2.5	2.0	3.0
Liquid side:	ø 9.52	Branch pipe diameter	Liquid side	ø 6.35	ø 6.35	ø 6.35	ø 9.52
Gas side:	ø 19.05		Gas side	ø 15.88	ø 15.88	ø 12.7	ø 15.88
	6HP	Indoor unit capacity (HP)		3.0	3.0	2.0	4.0
Liquid side:	ø 9.52	Branch pipe diameter	Liquid side	ø 9.52	ø 9.52	ø 6.35	ø 9.52
Gas side:	ø 19.05		Gas side	ø 15.88	ø 15.88	ø 12.7	ø 19.05

- The following table shows the pipe diameters for a triple-type system.

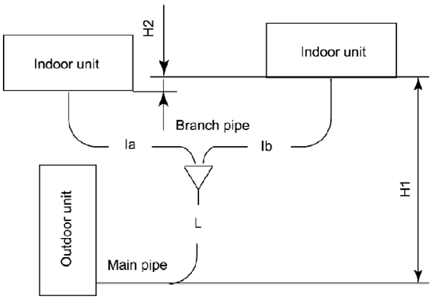
Outdoor unit main pipe diameter (mm)				Indoor unit combinations					
	6HP	Indoor unit capacity (HP)		2.0	2.0	2.0	1.5	1.5	3.0
Liquid side:	ø 9.52	Branch pipe diameter	Liquid side	ø 6.35	ø 6.35	ø 6.35	ø 6.35	ø 6.35	ø 9.52
Gas side:	ø 19.05		Gas side	ø 12.7	ø 12.7	ø 12.7	ø 12.7	ø 12.7	ø 15.88

- The following table shows the equivalent pipe lengths and height differences for twin- and triple-type systems.

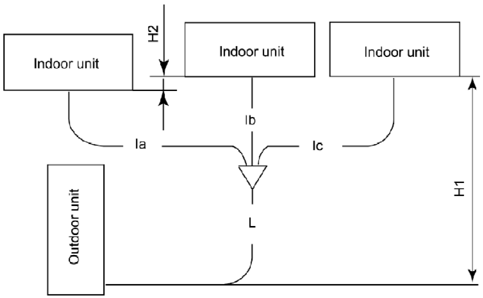
Equivalent length	L + la + lb + lc				Within 50 m
Branch pipe diameter	la, lb, (lc)				Within 15 m
Branch pipe difference	la - lb, lb - (lc), la - (lc)				Within 10 m
Height difference	H1	Within 30 m	Height difference between indoor units	H2	Within 1 m

Note:

1. **Use the main pipe to gain any rise or fall required for the pipes.**
2. **The number of bends should be 8 or less in a single system (L + la, L + lb, L + lc), and 15 or less overall.**
3. **Branch pipes should be position horizontally.**

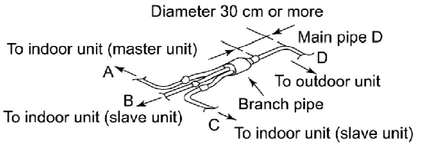

H2
Indoor unit
Indoor unit
Branch pipe
la
lb
Outdoor unit
L
H1
Main pipe

(Twin type)


H2
Indoor unit
Indoor unit
Indoor unit
lb
la
lc
Outdoor unit
L
H1

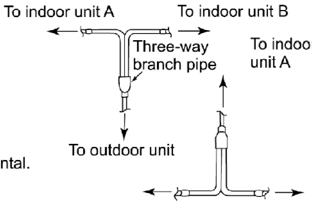
(Triple type)

- The branch pipe shoud be horizontal to or perpendicular to the indoor unit.

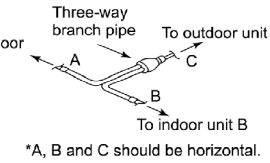

Diameter 30 cm or more
Main pipe D
To indoor unit (master unit)
D
A
To outdoor unit
B
Branch pipe
To indoor unit (slave unit)
C
To indoor unit (slave unit)

*A, B, C and D should be horizontal.

Horizontal connection


To indoor unit A
To indoor unit B
Three-way
branch pipe
To outdoor unit

Vertical installation


To indoor
unit A
Three-way
branch pipe
To outdoor unit
A
C
B
To indoor unit B

*A, B and C should be horizontal.

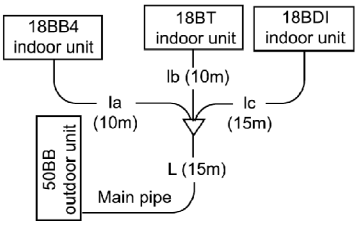
Horizontal installation

18.3. Refrigerant charging

- For twin and triple-type systems / The pipe length is the total of the branch pipe (L) and the junction pipes (la → lb → lc in order from the thickest diameter). At the point where the pipe length exceeds 30 m, determine the amount of refrigerant for the remaining liquid-side pipe diameters and pipe lengths from the following table in order to charge the system.

Liquid-side pipe diameter	ø6.35	ø9.52
Additional charging amount (kg/m)	0.02	0.05

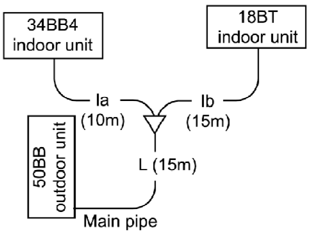
Example 1: For 50BB outdoor unit with an equivalent pipe length of 50 m


18BB4 indoor unit
18BT indoor unit
18BDI indoor unit
Ib (10m)
Ia (10m)
Ic (15m)
L (15m)
50BB outdoor unit
Main pipe

(Triple type)

		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe (kg)
Main pipe (L)		ø9.52	15m	Not needed if within 30m
Main pipe	(Ia)	ø6.35	10m	Not needed if within 30m
	(Ib)	ø6.35	10m	If exceeds 30m, 5m × 0.02 = 0.1
	(Ic)	ø6.35	15m	15m × 0.02 = 0.3
———			50m	Total 0.4 kg

Example 2: For 50BB outdoor unit with an equivalent pipe length of 40 m


34BB4 indoor unit
18BT indoor unit
Ia (10m)
Ib (15m)
L (15m)
50BB outdoor unit
Main pipe

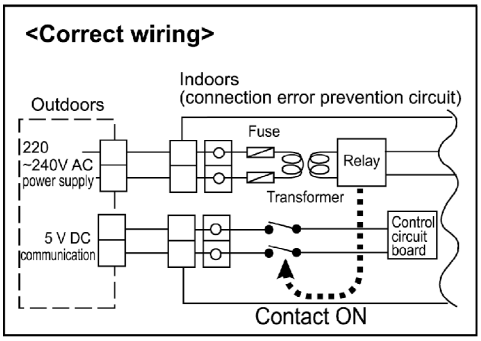
(Twin type)

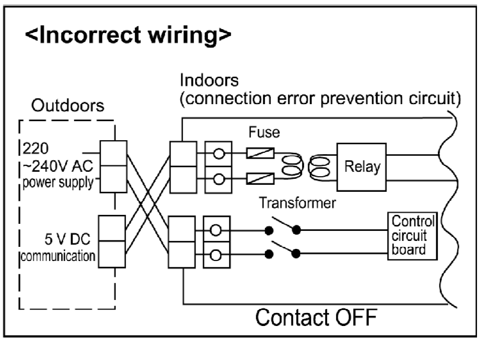
		Liquid pipe diameter	Equivalent length	Additional charging amount for each pipe (kg)
Main pipe (L)		ø9.52	15m	Not needed if within 30m
Main pipe	(Ia)	ø9.52	10m	Not needed if within 30m
	(Ib)	ø6.35	15m	If exceeds 30m, 10m × 0.02 = 0.2
———			40m	Total 0.2 kg

18.4. Wiring

19. WIRING MISTAKE PREVENTION

Improved quality of installation work through adoption of an “Connection error prevention” circuit which prevents wiring mistakes


<Correct wiring>
Outdoors
Indoors
(connection error prevention circuit)
220
~240V AC
power supply
Fuse
Relay
Transformer
5 V DC
communication
Control circuit board
Contact ON

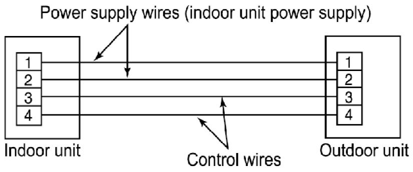

<Incorrect wiring>
Outdoors
Indoors
(connection error prevention circuit)
220
~240V AC
power supply
Fuse
Relay
Transformer
5 V DC
communication
Control circuit board
Contact OFF

Connection errors with the control wires and the power supply wires will not only contribute to burning-out of the control circuit board, but can also cause large-scale working losses and affect reliability. If a circuit board with a “Connection error prevention” circuit is used, the relay will not operate if the wires have been connected incorrectly, so that current will not flow to the control circuit board. This is designed principally to conpensate human error during installation.

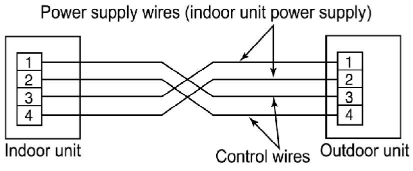
Prevention of connection errors

These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have been operated. In such cases, check that the power supply wires (connected to terminals [1] and [2] and the control wires (connected to terminals [3] and [4]) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.

(CORRECT)


Power supply wires (indoor unit power supply)
1
2
3
4
1
2
3
4
Indoor unit
Control wires
Outdoor unit

(INCORRECT)


Power supply wires (indoor unit power supply)
1
2
3
4
1
2
3
4
Indoor unit
Control wires
Outdoor unit

- Do not short the remote control wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE:

- Wait one minute after turning on the indoor unit power supply before operating the remote control.

- If nothing at all appears in the remote control LCD, check the power supply for the indoor unit. / Refer to "TROUBLESHOOTING" chapter.

NOTE:

Do not allow any of the following connection, as such connection may damage the printed circuit board.

- Do not connect anything except a relay to the timer input or fan speed output (connector CNT1 on printed circuit board).

- Do not connect U-NET transmission wires to terminals 3 and 4 of the indoor and outdoor units. (*1)

- Do not connect U-NET transmission wires to terminals A and B of the remote control.

(1*) U-NET transmission wires are the communication wires used for the central control.

20. TEST OPERATION AND SELF DIAGNOSIS

20.1. Test operation

- Always use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or any metallic object).

- Never turn on the power supply until all installation work has been completed.

- Turn on the circuit breaker before test operation extends past 12 hours. / (The crankcase heater will be energized, which will warm the compressor and prevent liquid compression.)

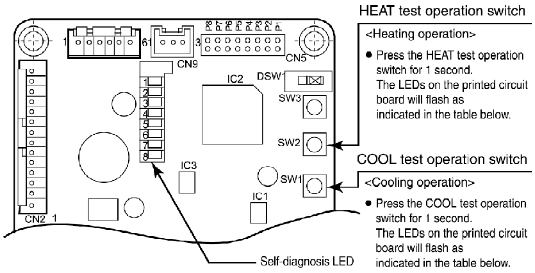
- For three-phase models, check that the phase is not reversed. / (If

the phase is reversed, the LED on the printed circuit board will flash.)

- **Check that the voltage is 198 V or higher when starting the unit. (The unit will not operate if the voltage is less than 198V.)**
- **Carry out test operation for 5 minutes or more, using the remote control or the switch on the outdoor unit printed circuit board.**
- **Always carry out cooling operation first during test operation, even during the warm season. / (If heating is carried out first, problems with operation of the compressor will result.)**

20.2. Test operation from the outdoor unit

(Outdoor unit printed circuit board)



HEAT test operation switch

<Heating operation>

- Press the HEAT test operation switch for 1 second. The LEDs on the printed circuit board will flash as indicated in the table below.

COOL test operation switch

<Cooling operation>

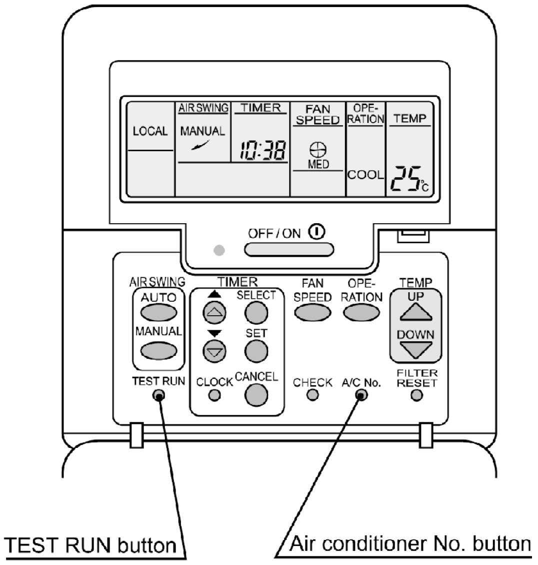
- Press the COOL test operation switch for 1 second. The LEDs on the printed circuit board will flash as indicated in the table below.

During outdoor unit emergency operation or test operation, the LEDs on the printed circuit board will flash.

	LEDs on outdoor unit printed circuit board						
	LED2	LED3	LED4	LED5	LED6	LED7	LED8
Emergency operation display			☼	☼	☼		
Cooling test operation from outdoor unit	☼	☼	☼				
Heating test operation from outdoor unit					☼	☼	☼

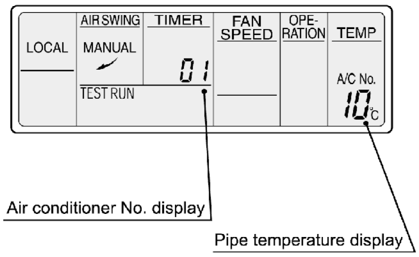
To cancel test operation, press the TEST RUN button once more while test operation is being carried out. / (Test operation will stop automatically after 30 minutes have passed.)

20.3. Test operation using the wired remote control


LOCAL
AIR SWING
MANUAL
TIMER
10:38
FAN SPEED
MED
OPE-RATION
COOL
TEMP
25℃
OFF / ON
AIR SWING
AUTO
MANUAL
TIMER
SELECT
SET
FAN SPEED
OPE-RATION
TEMP
UP
DOWN
TEST RUN
CLOCK
CANCEL
CHECK
A/C No.
FILTER RESET
TEST RUN button
Air conditioner No. button

1. **Check that "COOL" is displayed on the operation mode display, and then press the OFF/ON button to start test operation.**
2. **Within 1 minute of pressing the OFF/ON button, press the TEST RUN button.**
3. **The pipe temperature (gas pipe) will then be displayed in the temperature setting display of the remote control.**

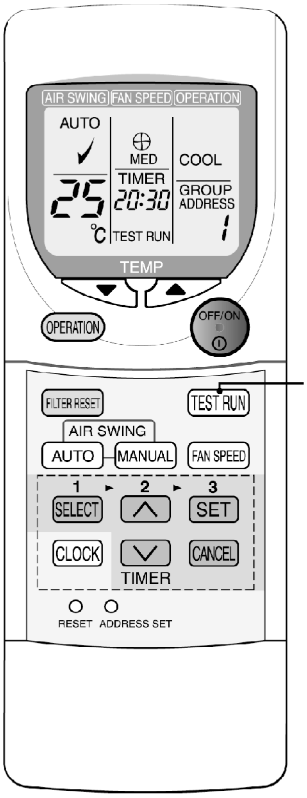
(Example)


LOCAL
AIR SWING
MANUAL
TEST RUN
TIMER
01
FAN SPEED
OPE-RATION
TEMP
A/C No.
10℃
Air conditioner No. display
Pipe temperature display

- **During group control, the number appearing in the timer display will change each time the air conditioner No. button is pressed, and the pipe temperature for the indoor unit corresponding to the number displayed will appear in the temperature setting display.**

4. **Check that the temperature in the pipe temperature display starts dropping after operation has been continuing for some time.**

20.4. Test operation using the wireless remote control


AIR SWING
FAN SPEED
OPERATION
AUTO
MED
COOL
TIMER
20:30
GROUP ADDRESS
25
°C
TEST RUN
1
TEMP
OPERATION
OFF/ON
TEST RUN button
FILTER RESET
TEST RUN
AIR SWING
AUTO
MANUAL
FAN SPEED
1
2
3
SELECT
SET
CLOCK
CANCEL
TIMER
RESET
ADDRESS SET

1. **Within 1 minute of pressing the OFF/ON button, press to cooling operation and then press the TEST RUN button.**
   - **If more than 1 minute passes, test operation cannot be started. In this case, press the OFF/ON button once more to repeat the operation.**
   - **Use the OPERATION button to change the operation. / The current operation mode will appear in the operation mode display.**
2. **When test operation starts, “TEST RUN” will appear in the timer display of the LCD, and operation will be carried out in accordance with the operation mode display (COOL or HEAT) appearing at that time. / However, the number in the temperature setting display will not change.**

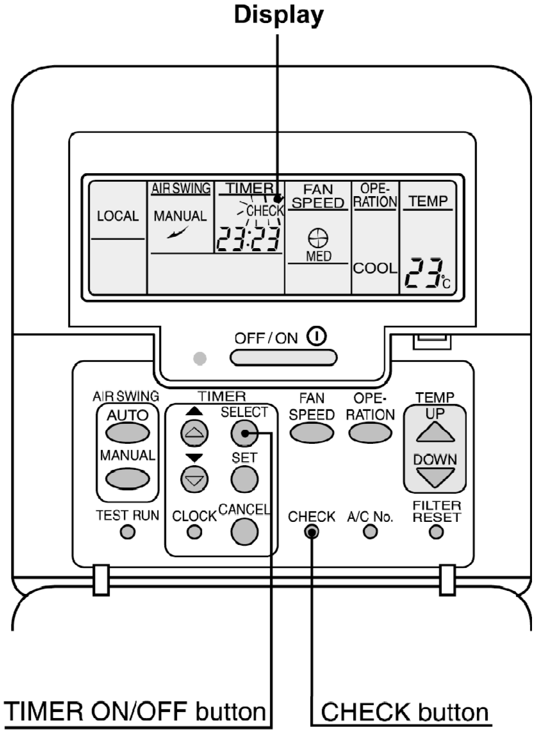
(Cancelling test operation)

- **Press the OFF/ON button, the TEMP (UP/DOWN) button, the OPERATION button, the FAN SPEED button or the TEST RUN button to cancel test operation.**

20.5. Self-diagnosis function

- The wired remote control display and the self-diagnosis LEDs (red) on the outdoor unit printed circuit board indicate where the abnormality has occurred.

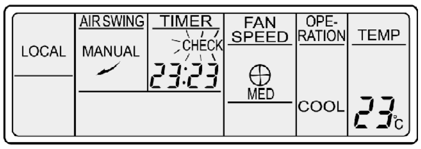
- Recalling the error display.


Display
LOCAL
AIR SWING
MANUAL
TIMER
CHECK
23:23
FAN SPEED
MED
OPE-RATION
COOL
TEMP
23 °C
OFF / ON
AUTO
MANUAL
SELECT
SET
UP
DOWN
TEST RUN
CLOCK
CANCEL
CHECK
A/C No.
FILTER RESET
TIMER ON/OFF button
CHECK button

<Air conditioner No.>

- The air conditioner No. "01" appears during normal installation and use. When using group control, a different number may appear. The air conditioner No. can be displayed by pressing the air conditioner No. button.

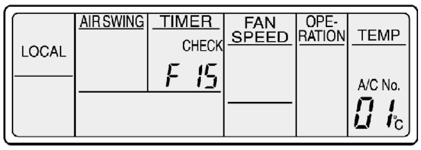
(Example)


LOCAL
AIR SWING
MANUAL
TIMER
CHECK
23:23
FAN SPEED
MED
OPE-RATION
COOL
TEMP
23 °C

When an abnormality occurs at this unit, "CHECK" flashes in the display. /

Press the CHECK button while the display is flashing. /

(Example)

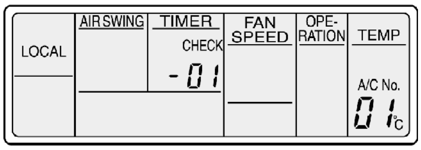

LOCAL
AIR SWING
TIMER
CHECK
F 15
FAN SPEED
OPE-RATION
TEMP
A/C No.
01 °C

The timer display will change and an error code from F15 to F49 will appear in place of the time. (The temperature setting display

will also change to show the air conditioner No.) /

Press the TIMER SELECT/SET button while the error is displayed. /

(Example)


LOCAL
AIR SWING
TIMER
CHECK
- 0 1
FAN SPEED
OPE-RATION
TEMP
A/C No.
0 1 ℃

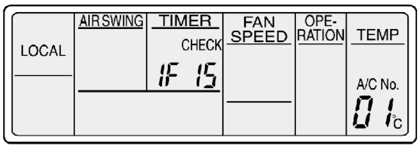
The F15 - F49 display will change to the detail display. /

- After checking the error display and the detail display, refer to the self-diagnosis error code table on the following page and check the location of the problem.
- If the problem is repaired and operation returns to normal, the CHECK display on the remote control will be eliminated, but the self-diagnosis LED will remain illuminated until the operation starts again.

How to display the past error message /

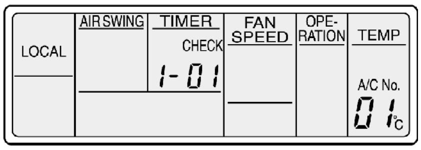
If the “CHECK” display on the wired remote control is not flashing, press the CHECK button continuously for 5 seconds or more to display the problem details for the last problem or the problem before that. You can then switch between the displays for the previous problem and the problem before that by pressing the TIMER FORWARD or BACK buttons. / (Last problem display: 1F15 - 1F49 / Second-last problem display: 2F15 - 2F49) / / Press the CHECK button once more to return to the normal display. /

(Example of last problem display)


LOCAL
AIR SWING
TIMER
CHECK
1F 15
FAN SPEED
OPE-RATION
TEMP
A/C No.
0 1 ℃

/ An error code from 1F15 to 1F49 will be displayed. / (The temperature setting display will also change to show the air conditioner No.) /

(Example)


LOCAL
AIR SWING
TIMER
CHECK
1- 0 1
FAN SPEED
OPE-RATION
TEMP
A/C No.
0 1 ℃

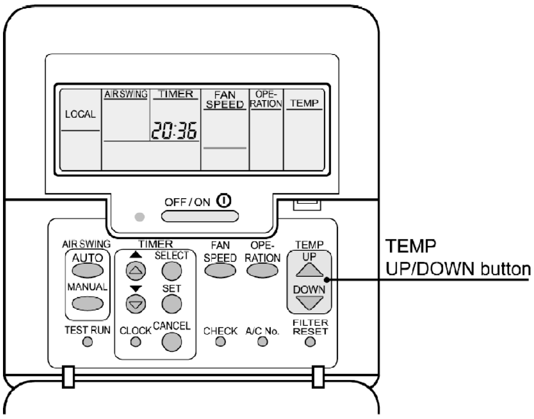
/ If the TIMER SELECT/SET button is pressed while the error code from 1F15 to 1F49 is being displayed, the display screen will change to show the details of the last problem display. / (If 2F15 to 2F49 is being displayed, the details of the second-last problem display will appear.)

21. SETTING OF SAVE ENERGY AND THERMISTOR SWITCH

21.1. Energy save setting

- Upper and lower limit can be set for the setting temperature during cooling and heating operation. (The factory shipment setting has

an upper limit of 31°C and a lower limit of 16°C.)

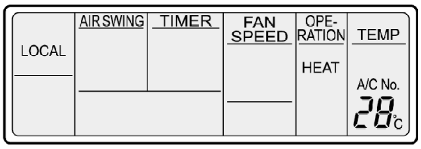

LOCAL
AIRSWING
TIMER
FAN SPEED
OPE-RATION
TEMP
20:36
OFF / ON
AIR SWING
AUTO
MANUAL
TEST RUN
TIMER
SELECT
SET
CLOCK
CANCEL
FAN SPEED
OPE-RATION
CHECK
A/C No.
TEMP
UP
DOWN
FILTER RESET

TEMP UP/DOWN button

1. **While operation is stopped, press the TEMP UP and TEMP DOWN buttons simultaneously.**

The display will change.

(Example)


AIRSWING
TIMER
FAN SPEED
OPE-RATION
TEMP
LOCAL
HEAT
A/C No.
28°C

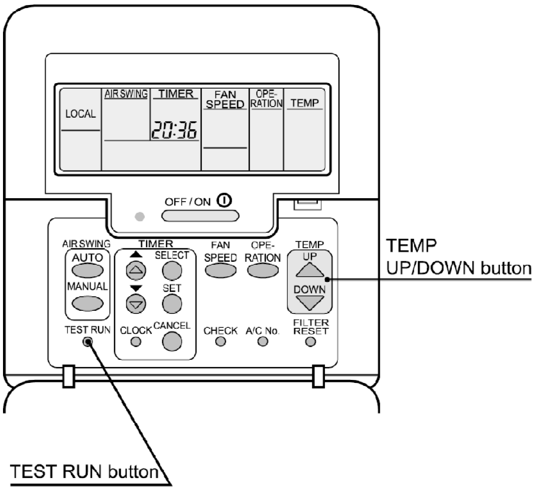
2. **To set an upper limit**
   Press the OPERATION button until HEAT is displayed. / ↓ / Press the TEMP UP or TEMP DOWN button to set the temperature. / ↓ / Press the SET button to complete the upper limit setting. / Example: / If the heating display is set to 28°C, setting the temperature to higher than 28°C will not be possible. / * Upper and lower limits cannot be set at the same time.

3. **To set a lower limit**
   Press the OPERATION button until COOL is displayed. / ↓ / Press the TEMP UP or TEMP DOWN button to set the temperature. / ↓ / Press the SET button to complete the lower limit setting. / Example: / If the cooling display is set to 22°C, setting the temperature to lower than 22°C will not be possible. / * Press the CANCEL button to cancel the setting.

21.2. Switching to the remote control thermistor

- The temperature detection thermistor used for detecting the indoor temperature can be switched between the thermistor at the indoor

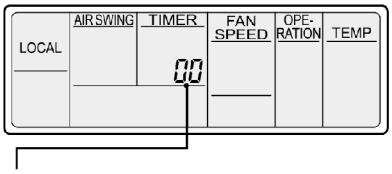
unit and the thermistor at the remote control unit. (The factory shipment setting is at the indoor unit side.)


LOCAL
AIR SWING
TIMER
20:36
FAN SPEED
OPE-RATION
TEMP
OFF / ON
AUTO
MANUAL
SELECT
SET
CLOCK
CANCEL
CHECK
A/C No.
FILTER RESET
UP
DOWN
TEST RUN
TEMP
UP/DOWN button
TEST RUN button

1. **While operation is stopped, press and hold the TEST RUN button, TEMP UP button and TEMP DOWN button simultaneously.**

The time display on the timer display panel will change.

(Example)


LOCAL
AIR SWING
TIMER
00
FAN SPEED
OPE-RATION
TEMP

"00" ... Indoor unit temperature detection setting
"01" ... Remote control temperature detection setting

Press the FORWARD or BACK timer button to change the temperature detection setting.

2. **Press the SET button to complete the setting.**
   To change the setting, repeat the above operation.

22. GROUP CONTROL

Setting group for 1 remote control unit

- **When using a remote control thermostat, the thermostat setting is used for all indoor units in the group.**
- **During group control, up to a maximum of 16 indoor units can be connected. (Do not mix heat pump units and cooling-only units.)**
- **Do not mix manual settings and automatic settings. (Manual settings take priority.)**
- **The master unit and slave units can be centralized controlled during group control. /**

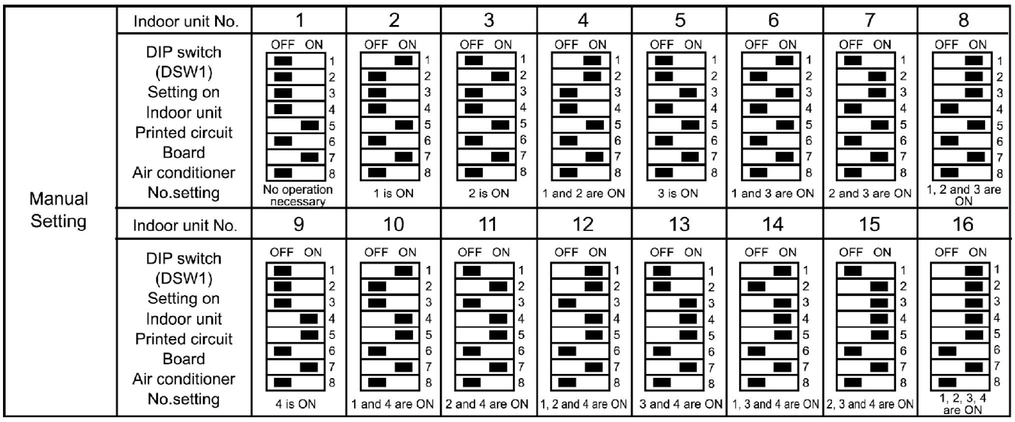
Automatic setting for group control

- **If the power supplies for indoor units which are connected are turned on simultaneously, the indoor unit numbers will be determined automatically after approximately 1 minute. (DIP switch settings are not necessary.) /**

NOTE:

- **Correct wiring connections are a basic requirement for automatic setting. If the wires are connected incorrectly when the power is turned on, the settings will not be made correctly and operation will not be possible.**
- **When address numbers are set automatically, you will not know which address number corresponds to which indoor unit.**
- **Do not turn off the power supply for at least 1 minute during automatic address setting, otherwise the settings will not be made correctly.**

(Manual setting for group control)



Manual Setting	Indoor unit No.	1	2	3	4	5	6	7	8
	DIP switch (DSW1) Setting on Indoor unit Printed circuit Board Air conditioner No.setting	No operation necessary	1 is ON	2 is ON	1 and 2 are ON	3 is ON	1 and 3 are ON	2 and 3 are ON	1, 2 and 3 are ON
	Indoor unit No.	9	10	11	12	13	14	15	16
	DIP switch (DSW1) Setting on Indoor unit Printed circuit Board Air conditioner No.setting	4 is ON	1 and 4 are ON	2 and 4 are ON	1, 2 and 4 are ON	3 and 4 are ON	1, 3 and 4 are ON	2, 3 and 4 are ON	1, 2, 3, 4 are ON

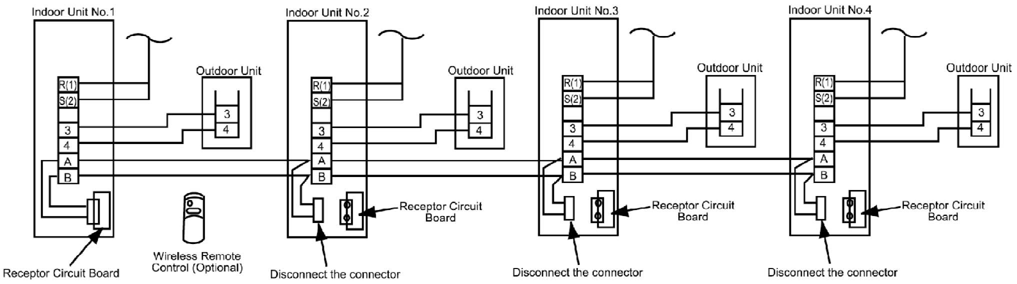
Automatic address resetting for group control

Set the DIP switches 1 to 4 to OFF and stop the operation. Then press the "AIR SWING AUTO", "OPERATION" and "Air conditioner No." buttons simultaneously. Then addresses will be momentarily reset, and then automatic address setting will be carried out once more.

/

Note with regard to the Mini-cassette

When carrying out group control of a Mini-cassette system using a single wireless remote control, be sure to disconnect the connectors for all receptor circuit boards except the one for indoor unit. No. 1, before turning on the power. (The same action as for the slave units in twin and triple systems is necessary.)


Indoor Unit No.1
Indoor Unit No.2
Indoor Unit No.3
Indoor Unit No.4
Outdoor Unit
R(1)
S(2)
3
4
A
B
Receptor Circuit Board
Wireless Remote Control (Optional)
Disconnect the connector

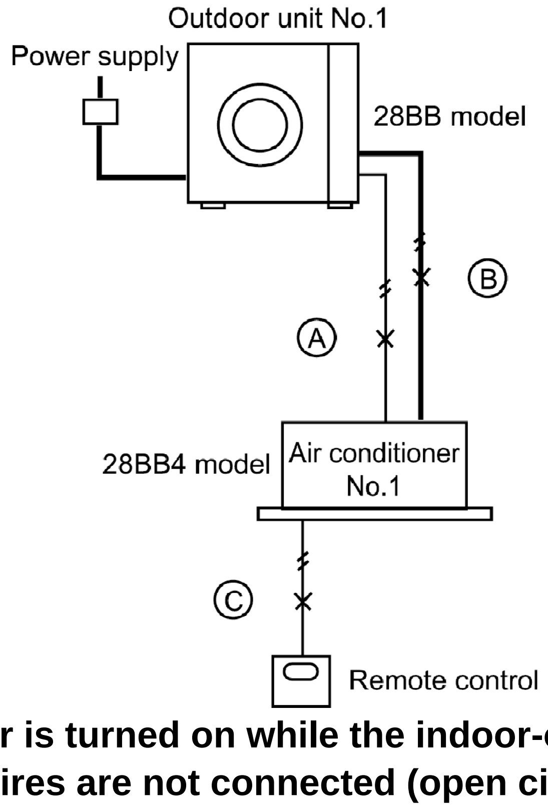
23. TROUBLESHOOTING

If test operation does not proceed correctly

Carry out test operation after approximately 12 hours have passed since the power was turned on (crankcase heater is energized). If operation is started by using the remote control within 1 minute of turning on the power, the outdoor unit settings will not be made correctly and correct operation will not be possible.

If the following symptoms occur after turning on the power, check the wiring connections once more. /

- For standard installation / (System example)

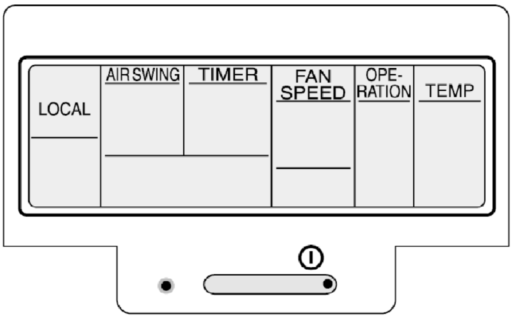

Outdoor unit No.1
Power supply
28BB model
Ⓑ
Ⓐ
28BB4 model
Air conditioner No.1
Ⓒ
Remote control

1. **The main power is turned on while the indoor-outdoor transmission wires are not connected (open circuit at section A) / Symptom: / Remote control unit... "CHECK" flashes / NOTE: / Indoor unit... LED2 on printed circuit board flashes / Outdoor**

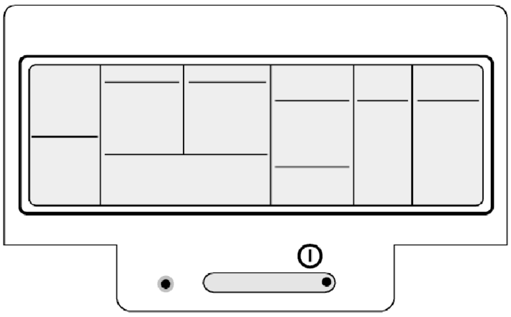
unit... LED3 and LED7 on printed circuit board flash /

2. The main power is turned on while the indoor-outdoor power supply wires are not connected (open circuit at section B) / Symptom: / Remote control unit... Display of “No power supply” / NOTE: / Indoor unit... No display / Outdoor unit... LED3 and LED7 on printed circuit board flash /
3. The main power is turned on while the remote control unit connection cord is not connected (open circuit at section C) / Symptom: / Remote control unit... Display of “No power supply” / NOTE: / Indoor unit... LED1 on printed circuit board stays illuminated / Outdoor unit... LED1 on printed circuit board stays illuminated

/ (When remote control display shows “Power supply”)



(When remote control display shows “No power supply”)



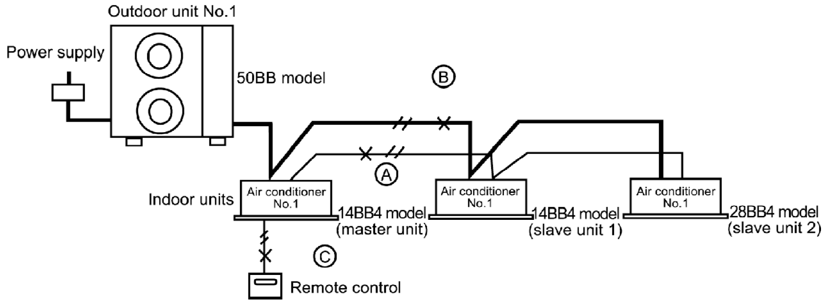
Remedy

1. Turn off the main power. / ↓
2. Connect the disconnected wire correctly. / ↓
3. Turn on the main power. / ↓
4. After 1 minute, start the operation using the remote control. / (Indoor unit operation will start according to the remote control setting.) / (Outdoor unit operation will start after 3-5 minutes.)

NOTE:

The “CHECK” display on the remote control and the flashing of LEDs on the printed circuit boards will not occur immediately. They will appear 3-6 minutes after the main power is turned on.

- **During twin/triple operation**
  (System example)


Outdoor unit No.1
Power supply
50BB model
Ⓑ
Ⓐ
Indoor units
Air conditioner No.1
Air conditioner No.1
Air conditioner No.1
14BB4 model (master unit)
14BB4 model (slave unit 1)
28BB4 model (slave unit 2)
Ⓒ
Remote control

1. **The main power is turned on while the transmission wires between the indoor unit(s) are not connected (open circuit at section A) / Symptom: / Nothing abnormal appears on the remote control display. If operation is started in this condition, the combination of the 50BB outdoor unit and the 14BB4 indoor unit (master unit) will result in abnormal operation. / ↓ / If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop.**

   - Remote control... “CHECK” flashes
   - Indoor unit (master)... The LEDs on the printed circuit board flash and operation stops
   - Indoor unit (slave)... LED1 on the printed circuit board illuminates and the unit does not operate at all
   - Outdoor unit... The LEDs on the printed circuit board flash and operation stops
2. **The main power is turned on while the power supply wires between the indoor unit(s) are not connected (open circuit at section B) / Symptom: / Same as above. If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop. / ↓**

   - Remote control... “CHECK” flashes
   - Indoor unit (master)... The LEDs on the printed circuit board flash
   - Indoor unit (slave)... The LEDs on the printed circuit board do

not illuminate and the unit does not operate at all

- Outdoor unit... The LEDs on the printed circuit board flash and operation stops

3. The main power is turned on while the remote control connection cord is not connected (open circuit at section C) / Symptom:

   - Remote control unit.. . Display of “No power supply”
   - Indoor unit (master)... LED1 on the printed circuit board stays illuminated and the unit does not operate
   - Indoor unit (slave)... LED1 on the printed circuit board stays illuminated and the unit does not operate
   - Outdoor unit... LED1 on the printed circuit board stays illuminated and the unit does not operate

Remedy

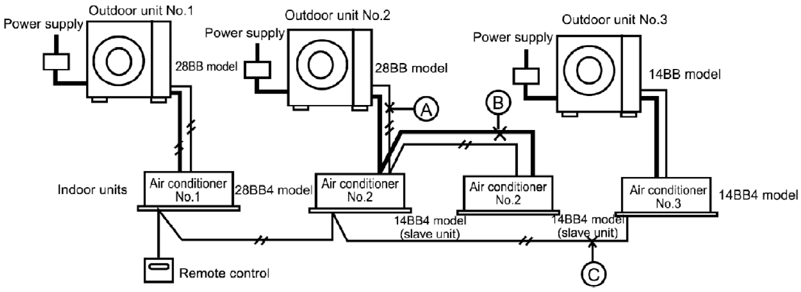
1. Turn off the main power. / ↓
2. Connect the disconnected wires correctly. / ↓
3. Turn on the main power. / ↓
4. After 1 minute, start the operation using the remote control. / (Indoor units’ operation will start according to the remote control setting.) / (Outdoor unit operation will start after 3-5 minutes.)

/ If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation. / ↓
2. Press the ADDRESS RESET button (SW3) at the outdoor unit for approximately 4 seconds / (The self-diagnosis LEDs 2 to 8 will illuminate in order, and the system is reset once they are all illuminated.)

/ The above procedure cannot be used to carry out automatic address resetting during group control. /

- **During group control operation**
  (System example)


Outdoor unit No.1
Power supply
28BB model
Outdoor unit No.2
Power supply
28BB model
Outdoor unit No.3
Power supply
14BB model
A
B
Indoor units
Air conditioner No.1
28BB4 model
Air conditioner No.2
14BB4 model (slave unit)
Air conditioner No.2
14BB4 model (slave unit)
Air conditioner No.3
14BB4 model
Remote control
C

1. The main power is turned on while the transmission wires between the indoor unit and the outdoor unit are not connected (open circuit at section A) / Symptom: / Operation of indoor unit No. 1 and indoor unit No. 3 is possible. / However, "CHECK" flashes in the remote control display for 3-5 minutes after the main power is turned on.

   - Remote control... "CHECK" flashes
   - Indoor unit No. 2... LED2 on the printed circuit board flashes (both master and slave units)
   - Outdoor unit No. 2... LED3 and LED7 on the printed circuit board flash
2. The main power is turned on while the power supply wires between the indoor units are not connected (open circuit at section B) / Symptom: / Operation of indoor unit No. 1 and indoor unit No. 3 is possible / However, if operation is then started in this condition, the combination of the 28BB outdoor unit and the 14BB4 indoor unit (master unit) will result in abnormal operation of indoor unit No. 2. / ↓ / If operation continues, an abnormality will occur on the refrigeration cycle and operation will stop

   - Remote control... "CHECK" flashes (indoor unit No. 2 abnormality)
   - Indoor unit No. 2... LED2 on the printed circuit board flashes (both master and slave units)
   - Outdoor unit No. 2... The LEDs on the printed circuit board flash
3. The main power is turned on while the remote control connection cord is not connected (open circuit at section C) / Symptom: /

Nothing abnormal appears on the remote control display, and operation of indoor unit. No. 1 and indoor unit No. 2 is possible. / However, indoor unit No. 3 cannot be operated.

- Remedy

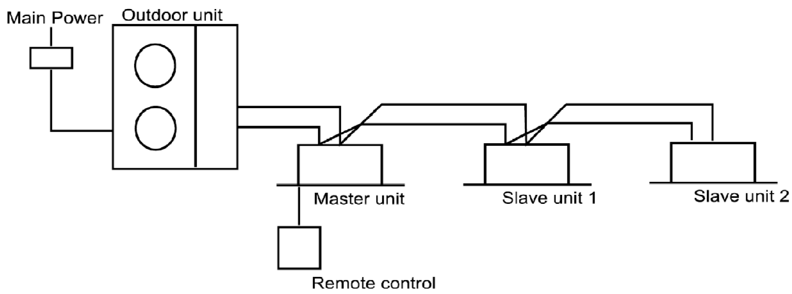
1. Turn off the main power. / ↓
2. Connect the disconnected wires correctly. / ↓
3. Turn on the main power. / ↓
4. After 1 minute, start the operation using the remote control. / (Indoor units' operation will start according to the remote control setting.) / (Outdoor units' operation will start after 3-5 minutes.) /

If slave units do not operate even after the wiring has been corrected (automatic addressing is not possible)

1. Check that DIP switches 1 to 4 and DIP switch 8 are all set to OFF, and then stop operation. / ↓
2. Press the "AIR SWING AUTO", "OPERATION" and "A/C No." buttons simultaneously. / The addresses will be momentarily reset, and then automatic address setting will be carried out once more.

/ The above procedure cannot be used to carry out automatic address resetting of twin/triple control. / / (Note on automatic address setting) / The printed circuit boards automatically store the connected system configuration when power is supplied. As a result, once the power has been turned on for these printed circuit boards, the units can not be changed about within the system, even if the units are of the same model and have same capacity.

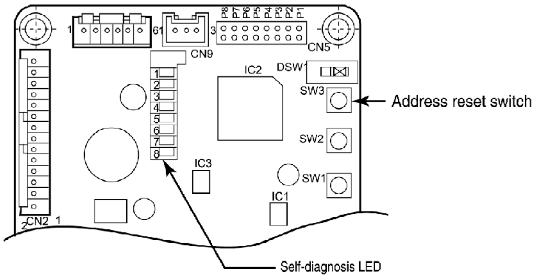
● **Address setting for twin/triple system**
(Example)



1. Automatic address setting (don't need to set dip-switch) / If the wiring is connected properly as above example, the address is set automatically by the main power supply. An indoor unit with

remote control will be set as the master. If the power source is installed to indoor units and outdoor units separately, turn on the switch by following the procedure: outdoor unit, then indoor unit with control, and finally other indoor units.

When the slave units do not operate (when address cannot be set) /



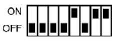
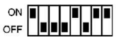
Reset the address by following the procedure:

A. After making sure that dip-switches No. 1 to 4 and No. 8 are OFF, stop the operation.

B. Push address reset button (SW3) on the outdoor unit PC board for 4 seconds. Self-diagnosis LED No. 2 to 8 will start blinking in order. And when all 7 pieces of LEDs (No. 2 ~ 8) are illuminated, the address for the slave unit has been reset.

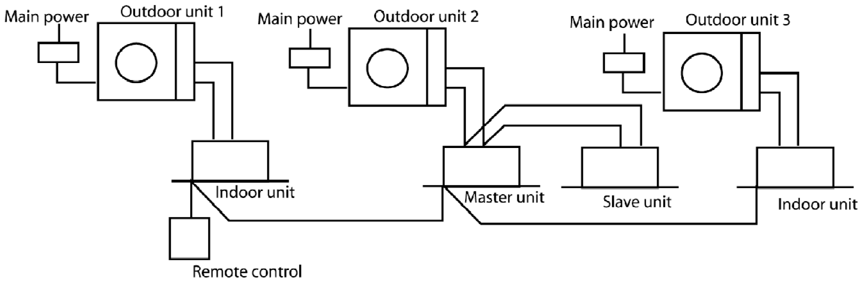
Important: **The address for the group control cannot be reset, using the above mentioned procedure.**

2. Manual address setting (by dip-switch DSW1) / When setting the address manually, set the dip-switch of the PC board of the indoor unit as follows:

Master Unit	Slave unit (Slave No.1 of Triple)	Slave unit (Slave No.2 of Triple)
The unit with the wired remote control or the ray receiver connected will be the master unit.	DSW1  No. 8 ON, The other no change	 No. 1 and 8 ON, The other no change

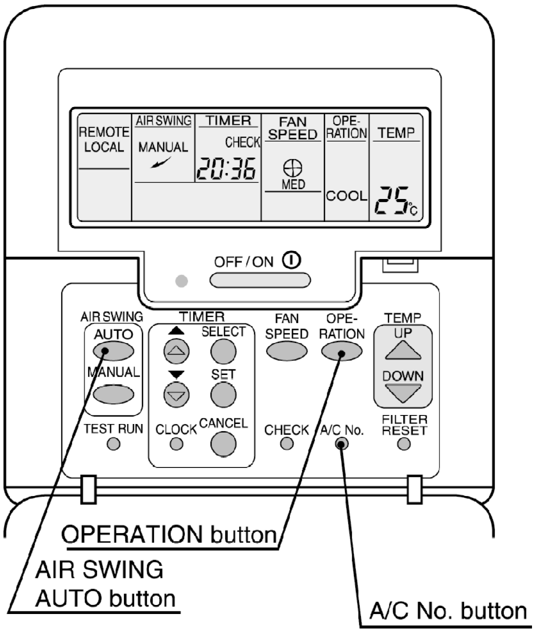
- **Address setting for group control system**

(Example)


Main power
Outdoor unit 1
Main power
Outdoor unit 2
Main power
Outdoor unit 3
Indoor unit
Master unit
Slave unit
Indoor unit
Remote control

1. Automatic address setting (don’t need to set dip-switch) / If the wiring is connected properly as above example, the AC numbers are set automatically by the main power supply. An indoor unit with remote control will be set as the master. / If the power source is installed to indoor units and outdoor units separately, turn on the switch by following the procedure: outdoor unit, then indoor unit with control, and finally other indoor units. The AC number will be set at random.

When the slave units do not operate (when address cannot be set)


REMOTE
LOCAL
AIR SWING
MANUAL
TIMER
CHECK
20:36
FAN SPEED
MED
OPE-RATION
COOL
TEMP
25°C
OFF / ON
AIR SWING
AUTO
MANUAL
TIMER
SELECT
SET
CANCEL
CLOCK
TEST RUN
FAN SPEED
OPE-RATION
TEMP
UP
DOWN
CHECK
A/C No.
FILTER RESET
OPERATION button
AIR SWING AUTO button
A/C No. button

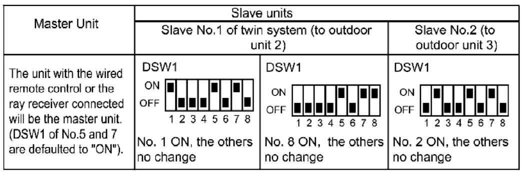
Reset the address by following the procedure:

A. Make sure that dip-switches No. 1 to 4 and No. 8 are OFF, stop the operation.

B. Simultaneously, push buttons “AIR SWING AUTO”, “OPERATION” and “A/C No.”. The address will be reset and new address will be set.

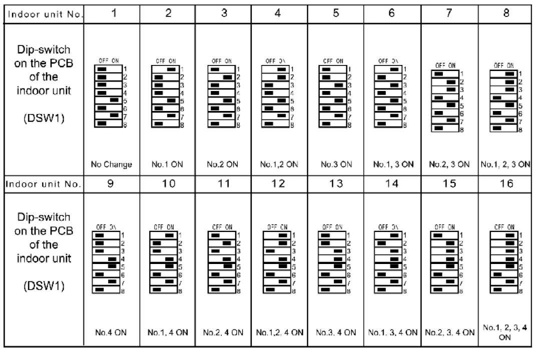
Important: **The address for the Twin/Triple control cannot be reset, using the above mentioned procedure.**

2. **Manual address setting (by dip-switch DSW1) / When setting the address manually, set the dip-switch of the PC board of the indoor unit as follows:**



Master Unit	Slave units		
	Slave No.1 of twin system (to outdoor unit 2)		Slave No.2 (to outdoor unit 3)
The unit with the wired remote control or the ray receiver connected will be the master unit. (DSW1 of No.5 and 7 are defaulted to "ON").	DSW1 ON OFF 1 2 3 4 5 6 7 8 No. 1 ON, the others no change	DSW1 ON OFF 1 2 3 4 5 6 7 8 No. 8 ON, the others no change	DSW1 ON OFF 1 2 3 4 5 6 7 8 No. 2 ON, the others no change

3. **Manual address setting (by dip-switch DSW1) / When setting the address manually, set the dip-switch of the PC board in the indoor unit as follows:**



Indoor unit No.	1	2	3	4	5	6	7	8
Dip-switch on the PCB of the indoor unit (DSW1)	No Change	No.1 ON	No.2 ON	No.1,2 ON	No.3 ON	No.1, 3 ON	No.2, 3 ON	No.1, 2, 3 ON
Indoor unit No.	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Dip-switch on the PCB of the indoor unit (DSW1)	No.4 ON	No.1, 4 ON	No.2, 4 ON	No.1,2, 4 ON	No.3, 4 ON	No.1, 3, 4 ON	No.2, 3, 4 ON	No.1, 2, 3, 4 ON

Procedures of deleting memory for twin/triple control system

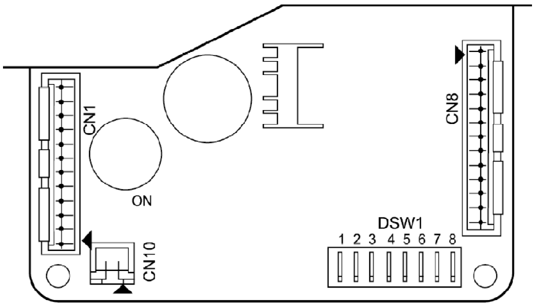
1. **Switch off the main power supply.**
2. **Set the No. 8 pin of dip switch (DSW1) at the indoor unit's P.C. board to "ON" position.**
3. **Switch on the main power supply for a minute and then turn it off.**
4. **Set the No. 8 pin of dip switch (DSW1) to "OFF" position.**

Procedures of deleting memory for group control system

1. **Switch off the main power supply.**
2. **Set the No. 1 until No. 4 pin of dip switch (DSW1) at the indoor unit's P.C. board to "ON" position. / (Make sure No. 8 pin of dip switch (DSW1) is at "OFF" position)**
3. **Switch on the main power supply for a minute and then turn it off.**
4. **Set the No. 1 pin until No. 4 pin of dip switch (DSW1) to "OFF"**

position.

(Important notice) / Above procedures are meant for deleting memory on indoor unit’s P.C. board. And it is not for Address reset.
Indoor unit P.C. board layout
Below drawing shows the location of dip switch 1 (DSW1) on the indoor unit P.C. board.



Dip switch 1 (DSW1). [to be used for manual setting]

24. EMERGENCY OPERATION

Emergency operation

- **Emergency operation of outdoor unit / Emergency operation can be carried out by setting the DSW1 switch on the printed circuit board of the outdoor unit to the EMERGENCY position. However, emergency operation is only carried out when an abnormality is detected by the indoor/outdoor temperature thermistors. / The resistance values of each thermistor are measured as shown in the table below to determine if there is an abnormality. / / Thermistor resistance table**

Temperature	Resistance value (kΩ) ± 5%	
	Room temperature thermistor	Pipe temperature thermistor
-20°C	205.8	197.8
-10°C	114.6	111.9
-5°C	87.3	85.4
0°C	67.0	65.8
5°C	51.8	51.0
10°C	40.4	39.9
15°C	31.7	30.7
20°C	25.1	25.0
25°C	20.0	20.0
30°C	16.1	16.0
40°C	10.4	10.6
50°C	6.9	7.1
60°C	4.7	4.9
70°C	----	3.5
80°C	----	2.5
90°C	----	1.8
100°C	----	1.4

The pipe temperature thermistor resistance value are the same for the indoor and outdoor units.

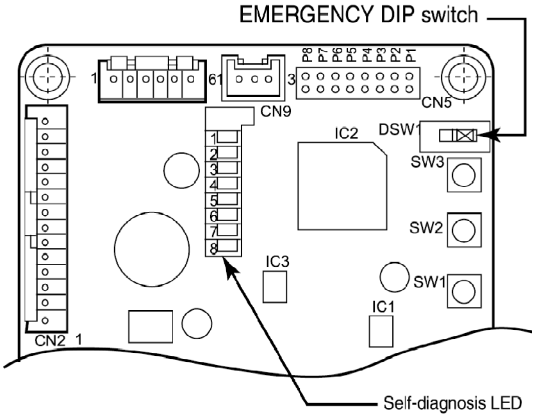
<When a thermistor abnormality is judged to have occurred>

- **Set only the thermistor which shows an abnormality to the condition as shown in the table below to carry out emergency operation.**

	Thermistor	Cooling mode	Heating mode
Indoor unit	Room temperature	Fixed at 25°C	
	Pipe temperature	Shorted	Open

	Thermistor	Cooling mode	Heating mode
Outdoor unit	Discharge temperature	Open	Shorted
	Heat exchanger outlet temperature	Shorted	Open

- **Refer to the circuit diagram for the connection locations for each thermistor.**
- **If there is an abnormality in the room temperature thermistor, the temperature will be fixed at 25°C regardless of the remote control display.**


EMERGENCY DIP switch
1
61
3
P8 P7 P6 P5 P4 P3 P2 P1
CN5
CN9
IC2
DSW1
SW3
SW2
SW1
1 2 3 4 5 6 7 8
IC3
IC1
CN2
1
Self-diagnosis LED

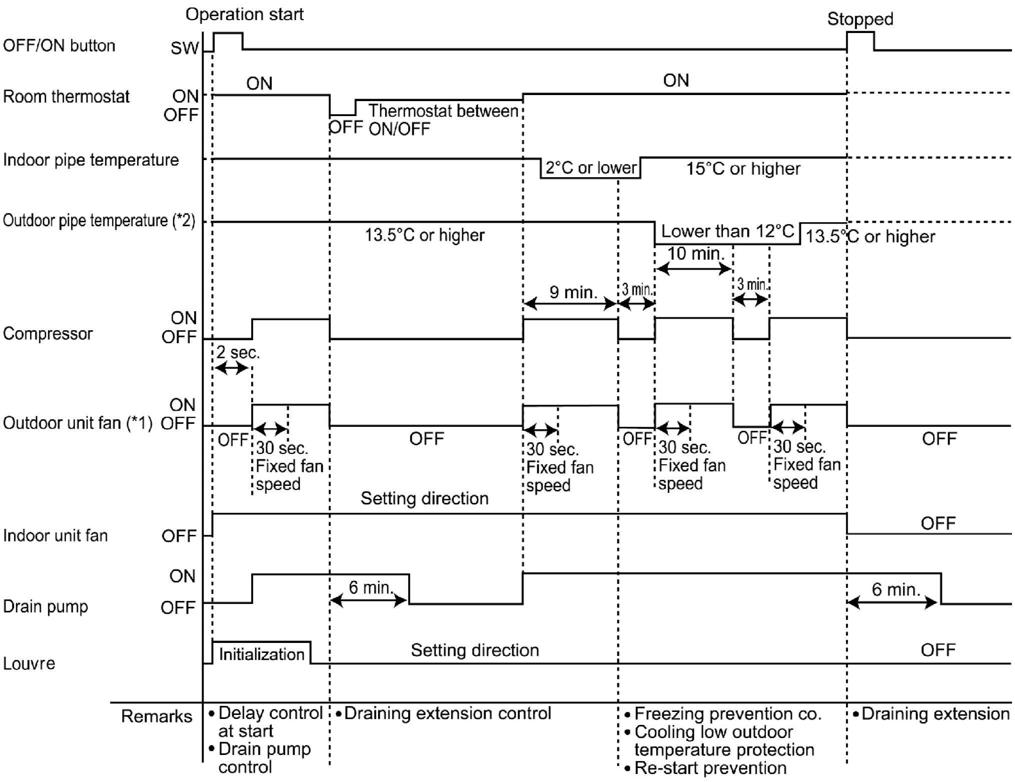
NOTE:

- **Any abnormalities detected by the temperature thermistors are ignored during emergency operation, therefore, long-term operation in this mode should be avoided.**
- **After emergency mode operation has been completed and normal operation is to be resumed, turn off the power supplies for the indoor and outdoor units and set the DSW1 switch to NORMAL position.**
- **Self-diagnosis LEDs 4 to 6 will flash during emergency operation.**

25. CONTROL

Description of basic Functions

25.1. Cooling mode operation time chart


Operation start
Stopped
OFF/ON button
SW
Room thermostat
ON
OFF
ON
Thermostat between
OFF ON/OFF
ON
Indoor pipe temperature
2°C or lower
15°C or higher
Outdoor pipe temperature (*2)
13.5°C or higher
Lower than 12°C
13.5°C or higher
10 min.
9 min.
3 min.
3 min.
Compressor
ON
OFF
2 sec.
Outdoor unit fan (*1)
ON
OFF
OFF
30 sec.
Fixed fan
speed
OFF
Setting direction
30 sec.
Fixed fan
speed
OFF
30 sec.
Fixed fan
speed
OFF
30 sec.
Fixed fan
speed
OFF
Indoor unit fan
OFF
OFF
Drain pump
ON
OFF
6 min.
6 min.
Louvre
Initialization
Setting direction
OFF
Remarks
• Delay control at start
• Drain pump control
• Draining extension control
• Freezing prevention co.
• Cooling low outdoor temperature protection
• Re-start prevention
• Draining extension

(*1) / Outdoor unit fan start control during cooling / At the start of cooling mode and drying mode operation, the outdoor unit heat exchanger outlet temperature is detected in order to set the fan speed. / Operation is carried out at the fan speed detected for 30 seconds.

Heat exchanger outlet temperature detected (T)	Outdoor unit fan start speed
T < 0°C	SUPER LOW
0°C ≦ T < 10°C	LOW
10°C ≦ T < 20°C	MEDIUM
20°C ≦ T < 25°C	HIGH
25°C ≦ T	SUPER HIGH

After 30 seconds, the heat exchanger outlet temperature is detected and the outdoor unit fan speed is changed automatically.

(*2) / Cooling low outdoor temperature protection / When the outlet temperature of the heat exchanger drops to less than 12°C for a continuous period of 10 minutes, the outdoor unit stops. / This is cancelled after 3 minutes (re-start prevention)

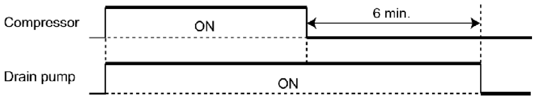
- **Remote control displays and indoor unit operation continue during this time.**
- **The 10 minutes countdown is cleared if the compressor stops or if the temperature at the outdoor unit outlet rises to 13.5°C or higher.**

25.2. Drain pump control

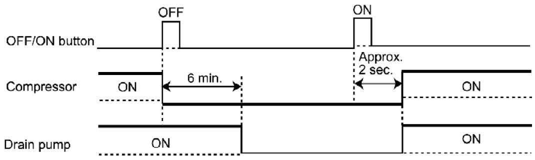
1. Basic operation / During cooling mode, dry mode or defrost mode

operation, the drain pump turns on when the compressor turns on. (The drain pump turns on during freezing prevention control.)

- When the compressor turns off, the drain pump will still continue its operation for 6 more minutes.


Compressor
ON
6 min.
Drain pump
ON

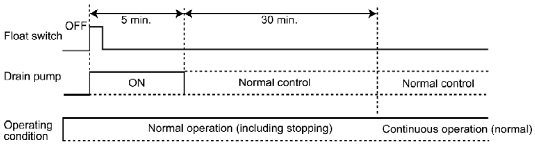
- If the drain pump is running when operation stops or when the operating mode is changed, the drain pump will still continue its operation for 6 more minutes.


OFF
ON
OFF/ON button
Approx. 2 sec.
Compressor
ON
6 min.
ON
Drain pump
ON
ON

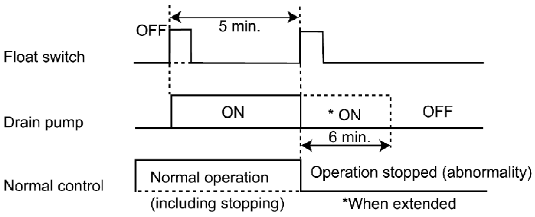
2. Drain water problems

A. Starting / If it is detected that the float switch is off, the drain pump turns on for 5 minutes. If the float switch is still found to be off after these 5 minutes have passed, or if the float switch is found to turn off twice during another 30 minutes period, a drain water error will be generated.

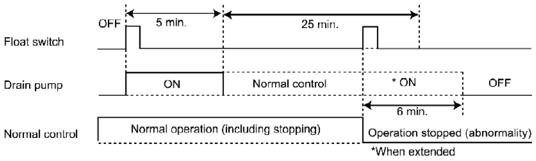
B. Normal operation / After extension control (louvre initialization and pre-heating cancel), the indoor units and outdoor units stop running. LED2 on the indoor unit self-diagnosis LED panel will flash, and “CHECK” will appear on the wired remote control display. / The error code (F15-01) can be displayed by pressing the CHECK button. / When the wireless remote control is being used, the OPERATION indicator on the ray receiver will flash. / / <If the float switch does not operate again after turning off>


5 min.
30 min.
OFF
Float switch
Drain pump
ON
Normal control
Normal control
Operating condition
Normal operation (including stopping)
Continuous operation (normal)

(When float switch is continuously off)

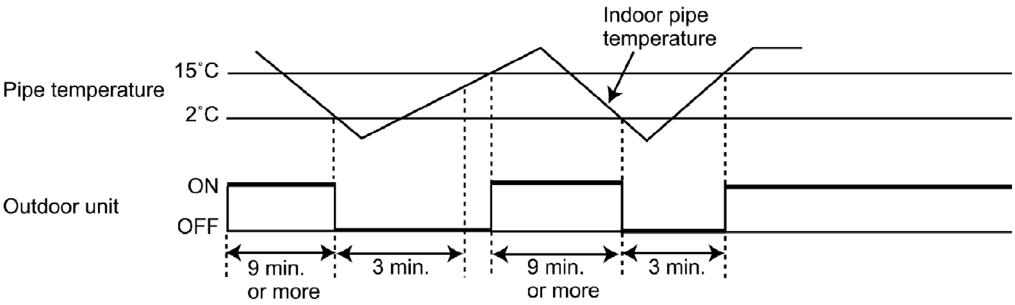

OFF
5 min.
Float switch
Drain pump
ON
* ON
OFF
6 min.
Normal control
Normal operation
(including stopping)
Operation stopped (abnormality)
*When extended

<If the float switch operates again after turning off> / <If the float switch continues to be off>


OFF
5 min.
25 min.
Float switch
Drain pump
ON
Normal control
* ON
OFF
6 min.
Normal control
Normal operation (including stopping)
Operation stopped (abnormality)
*When extended

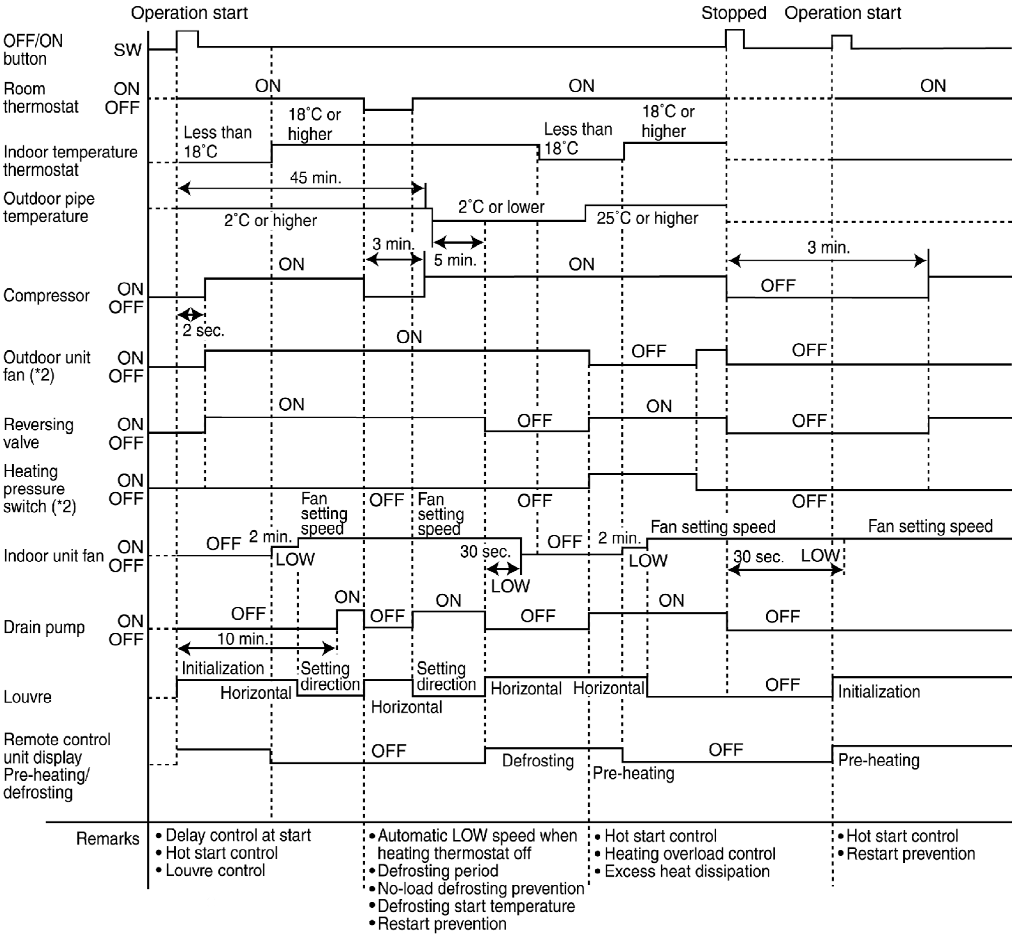
25.3. Freezing prevention control

1. **Operation / During cooling mode operation, after 9 minutes have passed since the compressor turned on, the outdoor unit will stop its operation when the temperature detected by the indoor unit pipe temperature sensor is 2°C or lower. / The indoor unit continues operating at the fan speed set by the remote control. (The remote control display does not change.)**
2. **Cancelling / This control is cancelled when the temperature detected by the indoor unit pipe temperature sensor is 15°C or higher, however 3 minutes waiting of prevention control is necessary. / (The 9 minutes countdown is cleared while the compressor is stopped.)**


Indoor pipe temperature
Pipe temperature
15˚C
2˚C
Outdoor unit
ON
OFF
9 min. or more
3 min.
9 min. or more
3 min.

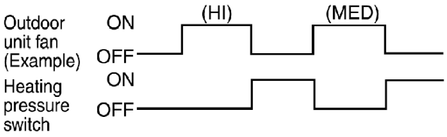
(The above illustration only shows the operation stops due to freezing prevention control of the indoor pipe temperature sensor.)

25.4. Heating mode operation time chart (Heat pump type)


Operation start
Stopped
Operation start
OFF/ON button
SW
Room thermostat
ON
OFF
Indoor temperature thermostat
Less than 18˚C
18˚C or higher
45 min.
Outdoor pipe temperature
2˚C or higher
2˚C or lower
25˚C or higher
3 min.
5 min.
Compressor
2 sec.
Outdoor unit fan (*2)
Reversing valve
Heating pressure switch (*2)
Indoor unit fan
Fan setting speed
2 min.
LOW
30 sec.
Drain pump
10 min.
Louvre
Initialization
Horizontal
Setting direction
Remote control unit display Pre-heating/ defrosting
Defrosting
Pre-heating
Remarks
• Delay control at start
• Hot start control
• Louvre control
• Automatic LOW speed when heating thermostat off
• Defrosting period
• No-load defrosting prevention
• Defrosting start temperature
• Restart prevention
• Hot start control
• Heating overload control
• Excess heat dissipation
• Hot start control
• Restart prevention

(*2) / Outdoor unit fan control during heating mode operation / When the compressor is on during heating mode operation (except during defrosting and when the liquid bypass valve is on), the outdoor unit fan is controlled by means of input (CN2) indicating whether the contact of the heating pressure switch on the outdoor unit circuit board is open or closed. / (At the start of heating mode operation, the fan operates at HI speed.)

Heating pressure switch contact	Outdoor unit fan operation
ON (open) - OFF (closed)	One step down from fan speed before stopping
ON (open)	Stopped


Outdoor unit fan (Example)
ON
OFF
(HI)
(MED)
Heating pressure switch
ON
OFF

The heating pressure switch turns on at 2.35 MPa and off at 1.96 MPa.

25.5. Hot starting

1. When heating mode operation starts

A. Start

Hot start control commences when heating mode operation starts.

B. Operation

“PREHEAT” appears on the remote control display. (Other displays remain unchanged.) / The indoor unit fan stops. In addition, during hot starting, the louvre stays at the horizontal

position (angle 0°).

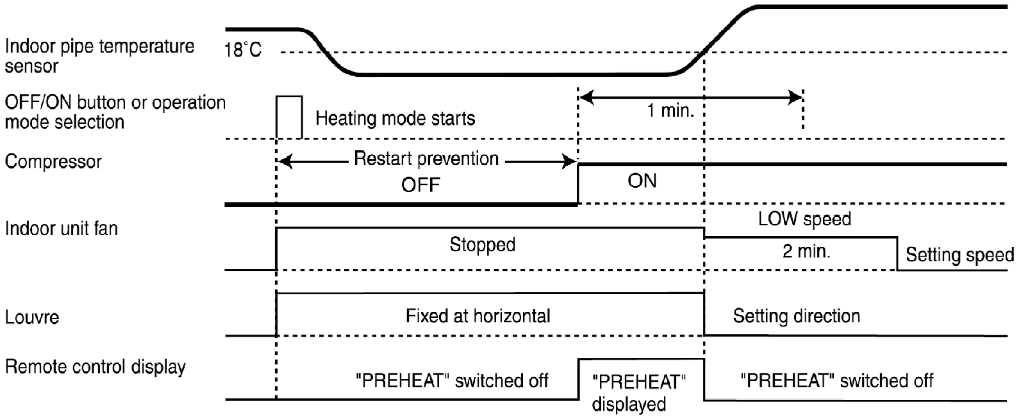
C. Cancelling

Hot starting will be cancelled when the compressor is turned on or the indoor unit pipe temperature sensor is 18°C or higher or after 1 minute of operation.

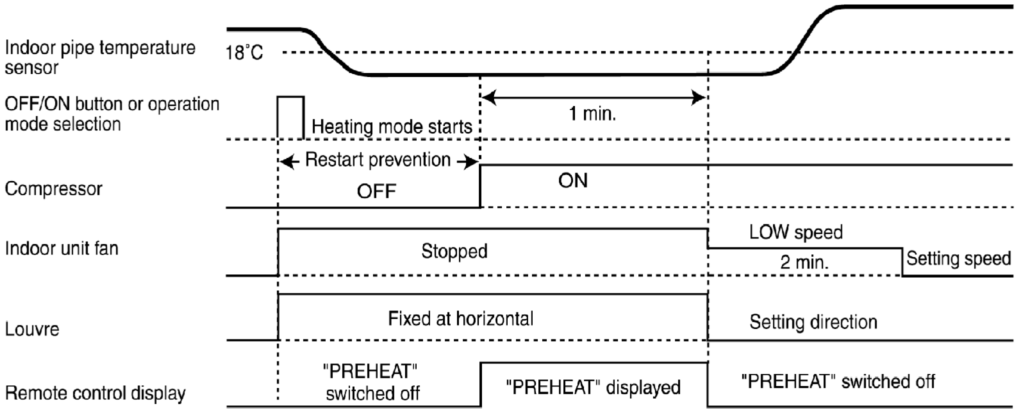
After cancellation, the "PREHEAT" display on the remote control disappears and the louvre operation returns to the previous setting.

(However, for 2 minutes after cancellation, the indoor unit fan operates at LOW speed, and then returns to the previous setting.)

<When hot start operation is cancelled by temperature>


Indoor pipe temperature sensor
18°C
OFF/ON button or operation mode selection
Heating mode starts
1 min.
Compressor
Restart prevention
OFF
ON
Indoor unit fan
Stopped
LOW speed
2 min.
Setting speed
Louvre
Fixed at horizontal
Setting direction
Remote control display
"PREHEAT" switched off
"PREHEAT" displayed
"PREHEAT" switched off

<When hot start operation is cancelled by time>


Indoor pipe temperature sensor
18°C
OFF/ON button or operation mode selection
Heating mode starts
1 min.
Compressor
Restart prevention
OFF
ON
Indoor unit fan
Stopped
LOW speed
2 min.
Setting speed
Louvre
Fixed at horizontal
Setting direction
Remote control display
"PREHEAT" switched off
"PREHEAT" displayed
"PREHEAT" switched off

2. When defrosting is completed

A. Start

Hot start control commences when defrosting is completed.

B. Operation

"PREHEAT" appears on the remote control display. (Other displays remain unchanged)

The indoor unit fan stops. In addition, during hot starting, the louvre stays at the horizontal position (angle 0°C).

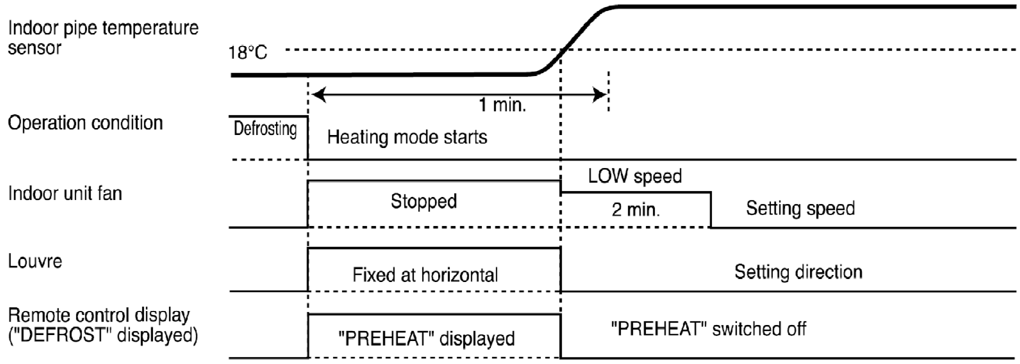
C. Cancelling

Hot starting will be cancelled when the temperature detected by the indoor unit pipe temperature sensor is 18°C or higher, or after a maximum 1 minute has passed since defrosting was completed.

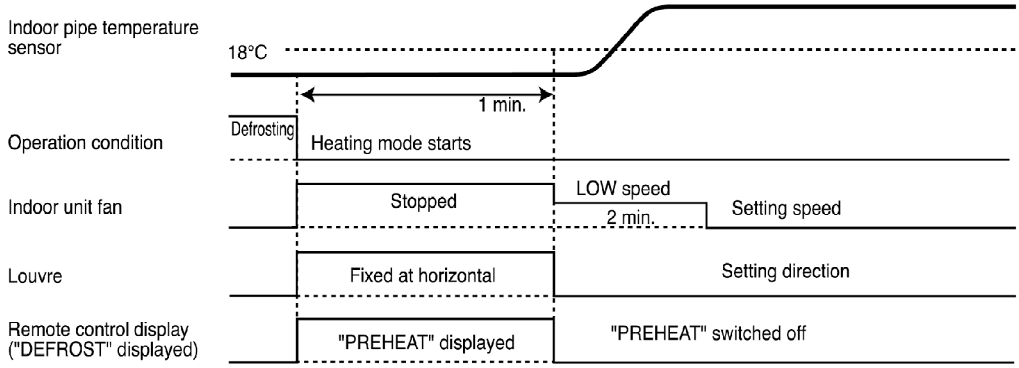
After cancellation, the "PREHEAT" display on the remote control disappears and the louvre operation returns to the previous setting.

(However, the indoor unit fan operates at LOW speed for 2 minutes after cancellation, and then returns to the previous setting.)

<When hot start operation is cancelled by temperature>

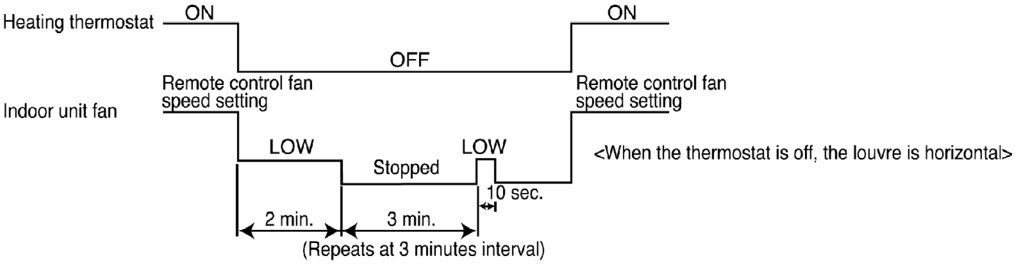

Indoor pipe temperature sensor
18°C
1 min.
Operation condition
Defrosting
Heating mode starts
Indoor unit fan
Stopped
LOW speed
2 min.
Setting speed
Louvre
Fixed at horizontal
Setting direction
Remote control display ("DEFROST" displayed)
"PREHEAT" displayed
"PREHEAT" switched off

<When hot start operation is cancelled by time>


Indoor pipe temperature sensor
18°C
1 min.
Operation condition
Defrosting
Heating mode starts
Indoor unit fan
Stopped
LOW speed
2 min.
Setting speed
Louvre
Fixed at horizontal
Setting direction
Remote control display ("DEFROST" displayed)
"PREHEAT" displayed
"PREHEAT" switched off

25.6. Indoor unit fan control when thermostat is off during heating mode operation

When the thermostat of the indoor unit turns off during heating mode operation, the indoor unit fan operates for 2 minutes at LOW and then stops. In addition, 5 minutes after the thermostat of the indoor unit turns off, the indoor unit fan operates at LOW for 10 seconds, and at 3 minutes interval after that, it switches back to LOW operation for another 10 seconds.


Heating thermostat
ON
OFF
ON
Indoor unit fan
Remote control fan speed setting
LOW
Stopped
LOW
Remote control fan speed setting
<When the thermostat is off, the louvre is horizontal>
10 sec.
2 min.
3 min.
(Repeats at 3 minutes interval)

25.7. Excess heat dissipation for indoor unit

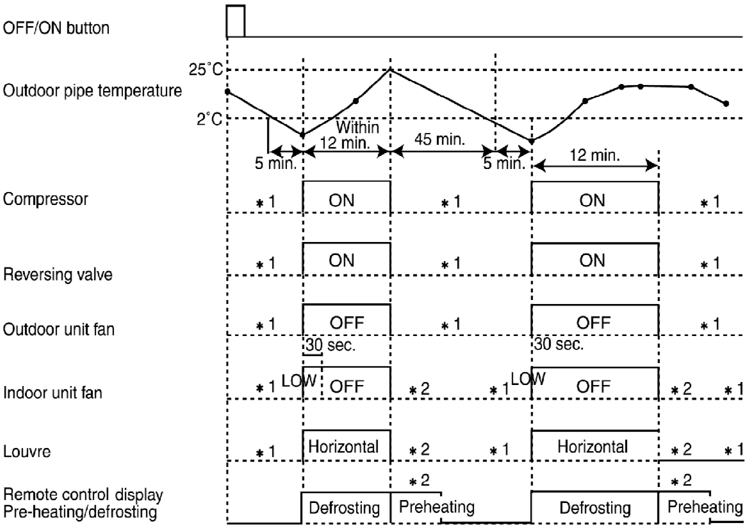
The indoor unit fan continue its operation for 30 seconds after heating mode operation turns off in order to dissipate excess heat.

1. When heating mode operation has stopped (LOW speed for 30 seconds)

2. When operation is set to a mode other than heating by means of the OPERATION button

3. If operation starts again during the 30 seconds mentioned at (1) (The fan operates at LOW speed for the remainder of the 30 seconds and then hot start commences.)

25.8. Defrost mode operation time chart


OFF/ON button
Outdoor pipe temperature
25˚C
2˚C
5 min.
Within 12 min.
45 min.
5 min.
12 min.
Compressor
Reversing valve
Outdoor unit fan
Indoor unit fan
Louvre
Remote control display Pre-heating/defrosting
∗1
∗2
ON
OFF
30 sec.
LOW
Horizontal
Defrosting
Preheating

*1 indicates during normal operation.
*2 indicates during hot start control.

1. Start and completion of defrosting

A. Start

During heating mode operation (including automatic heating), after the 45 minutes of defrosting cycle time has passed, defrosting starts if the temperature detected by the outdoor unit heat exchanger outlet sensor is 2°C or lower continuously for 5 minutes.

However, if the outdoor unit fan is stopped, the start of defrosting will be delayed by 5 minutes.

Then, the defrosting cycle will be 50 minutes from the start of heating mode operation.

B. Completion

Defrosting mode operation will stop if the outdoor unit heat exchanger outlet sensor is 25°C or higher or after 12 minutes of operation.

C. Forced defrosting

If P8 on the outdoor unit circuit board is shorted while the compressor is on during heating mode operation and the temperature detected by the outdoor unit heat exchanger outlet sensor is 25°C or lower, defrosting is carried out regardless of the current starting conditions.

2. Operation

A. During defrosting, the outdoor unit turns on the compressor and turns off the outdoor unit fan and the reversing valve.

B. The indoor unit fan operates at LOW speed for 30 seconds upon defrosting starts, After this, the indoor unit fan turns off until defrosting is completed.

(During defrosting, the louvre of the indoor unit stays at horizontal position).

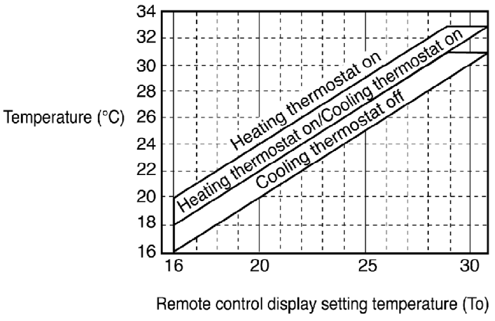
25.9. Indoor thermostat characteristics

1. Thermostat characteristics during cooling and heating modes.

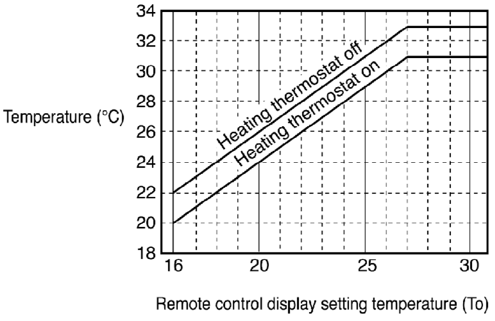
Operation mode	Setting temperature (To)	Room temperature (°C)		
		Operation	Differential	
			2.0K	4.0K
Cooling	16	O N	18.0	____
		O F F	16.0	____
	31	O N	33.0	____
		O F F	31.0	____
Heating *1	16	O N	18.0	20.0
		O F F	20.0	22.0
	29~31 *1 (27~31)	O N	31.0	31.0
		O F F	33.0	33.0

1* **If jumper wire J3 on the indoor unit circuit board is disconnected, the thermostat characteristics during heating become 2K or higher.**

Thermostat characteristics during cooling and heating modes



Thermostat characteristics during heating mode (when jumper wire J3 is disconnected)



NOTE: If the remote control display setting temperature (To) is 29°C or higher, the heating thermostat turns on when the room temperature is 31°C.

2. Thermostat characteristics during dry mode.

During dry mode operation, cooling mode operation is carried out in accordance with the indoor temperature as shown in the table below.

Mode	Indoor Temperature (°C) T	Operation details	
1	T ≧ 28	Cooling thermostat on	LO, Louvre horizontal
2	28 > T ≧ 25	Cooling thermostat on 10 min./fan 5 min., alternate operation	LO, Louvre horizontal
3	25 > T ≧ 21	Cooling thermostat on 5 min./fan 10 min., alternate operation	LO, Louvre horizontal
4	21 > T	Cooling thermostat off	LO, Louvre horizontal

(Differential is 1.5 K)

*** When modes (2) and (3) are active, dry mode operation starts when the cooling thermostat turns on.**
When modes (2) and (3) have been stopped, the 10 min./5 min. times have no relevance.
However, if the indoor temperature is less than or equal to the remote control unit setting temperature, mode (4) is forcibly activated.

3. Thermostat characteristics during automatic changeover operation

A. Settings at the start of automatic changeover operation

When operation changes from other modes to automatic changeover mode, operation starts at the temperature characteristics given in the table below.

Indoor Temperature (T) °C	Initial setting
T < remote control display temperature -2 (°C)	Heating mode operation, thermostat on
Remote control display temperature ≥ T	Heating mode operation, thermostat off (fan mode operation)
Remote control display temperature ≤ T	Cooling mode operation, thermostat off (fan mode operation)
Remote control display temperature +2 (°C) < T	Cooling mode operation, thermostat on

2 (°C): Thermostat differential

B. Thermostat characteristic when switching between cooling and heating mode operation

Switching between cooling mode and heating mode operation is carried out as shown in the table below.

However, during automatic changeover operation, the operation will not change within 10 minutes after the thermostat has switched off, either cooling mode or heating mode.

(The 10 minutes timer will be cancelled when operation is changed to other modes (manually) or when operation stops and the thermostat turns on.)

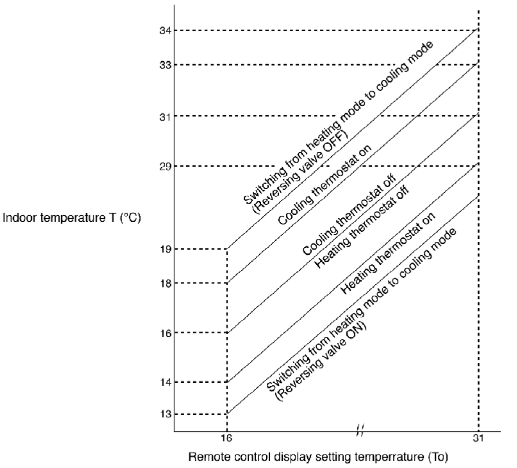
Indoor Temperature (T) °C	Operation switching
T ≧ Remote control display temperature +3 (°C)	Heating mode → Cooling mode
T ≦ Remote control display temperature -3 (°C)	Cooling mode → Heating mode

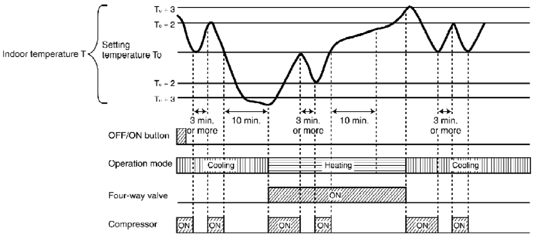
C. Thermostat characteristics during cooling mode and heating operation

The thermostat on/off characteristics in both operation modes are given in the table below.

Operation mode	Indoor Temperature (°C) T	Operation
Cooling mode	T > Remote control display temperature +2 (°C)	Cooling thermostat on
	T ≦ Remote control display temperature	Cooling thermostat off
Heating mode	T < Remote control display temperature -2 (°C)	Cooling thermostat on
	T ≥ Remote control display temperature	Cooling thermostat off

Indoor temperature thermostat characteristics during automatic changeover operation




Indoor temperature T
Setting temperature To
$T_o + 3$
$T_o + 2$
$T_o - 2$
$T_o - 3$
3 min. or more
10 min.
3 min. or more
10 min.
3 min. or more
OFF/ON button
Operation mode
Cooling
Heating
Cooling
Four-way valve
ON
Compressor
ON
ON
ON
ON
ON
ON

Automatic cooling/heating mode operation time chart

25.10. Indoor unit fan control

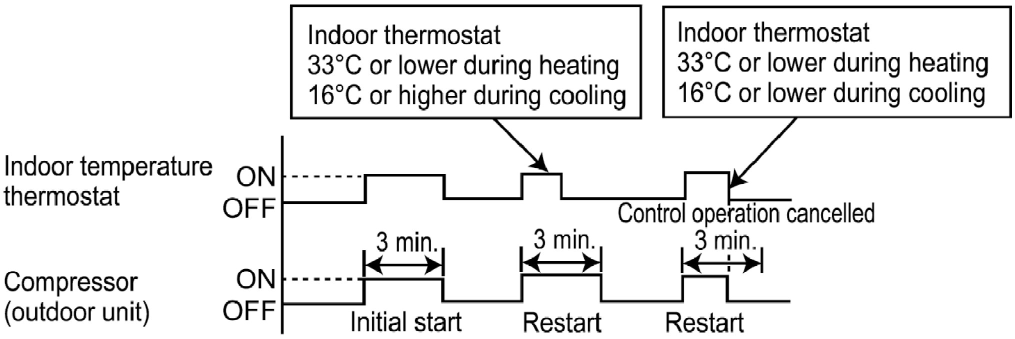
1. Fixing at LO, MED or HI / When LO, MED or HI is set, the relay switches and operation is carried out at that setting.
2. Automatic fan speed / When set to AUTO, the indoor unit fan operation changes as shown in the table below.

(Indoor temperature) - (Setting temperature) (

Mode / Fan Speed	HI	MED	LO
Cooling	+3 or higher	+1.5 ~ 3	Less than +1.5
Heating	-3 or lower	-1.6 ~ - 3	More than -1.5
Fan	MED irrespective of temperature		

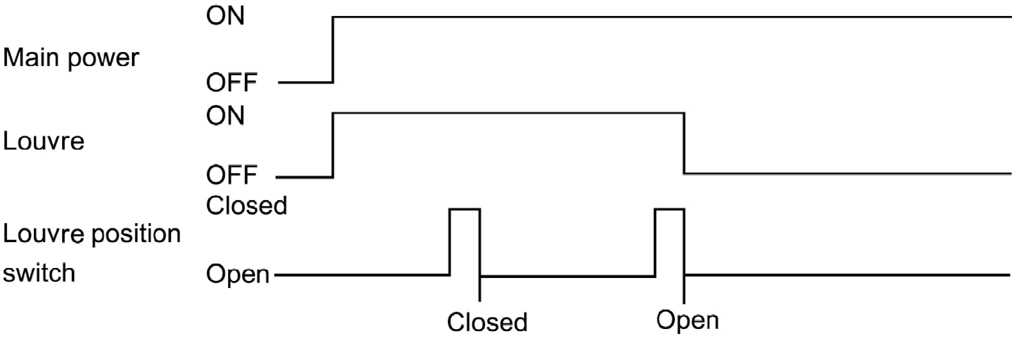
25.11. Forced operation during restart

The compressor will not stop operating for 3 minutes after cooling mode operation starts, even if the indoor unit thermostat turns off. / (However, the compressor will stop operating during this time if the indoor unit air intake temperature drops to 16°C and below during cooling mode operation.)


Indoor thermostat
33°C or lower during heating
16°C or higher during cooling
Indoor thermostat
33°C or lower during heating
16°C or lower during cooling
Indoor temperature thermostat
ON
OFF
Control operation cancelled
3 min.
3 min.
3 min.
Compressor (outdoor unit)
ON
OFF
Initial start
Restart
Restart

25.12. Louvre control (models with louvre)

1. When main power is turned on / When the power is turned on, indoor unit louvre position detection is carried out twice and then the indoor unit louvre stops.


Main power
ON
OFF
Louvre
ON
OFF
Louvre position switch
Closed
Open
Closed
Open

2. During initial operation / When the OFF/ON button is pressed to start the operation, the louvre moves through one full cycle, and then swings automatically (if AUTO has been set using the remote control) or moves to the setting angle (if MANUAL has been set using the remote control).

3. When operation stops / When the OFF/ON button is pressed to stop the operation, the louvre moves through one full cycle, and then stops in the down position, regardless of the remote control setting.

4. When thermostat is off / When operation is stopped by the indoor thermostat, the louvre moves through one full cycle, and then stops in the horizontal position, regardless of the remote control setting.

25.13. Outdoor unit fan excess heat dissipation control

1. When the operation is stopped while the compressor is in operation, the outdoor fan will run at SUPER HI fan speed for approximately 60 seconds and then stops.

25.14. Discharge temperature control

1. Operation / When the discharge temperature sensor detects a temperature of 100°C or higher during cooling mode operation, the liquid bypass valve will be turned on.

2. Cancelling / When the discharge temperature sensor detects a temperature of 70°C or lower, the liquid bypass valve will be turned off.

25.15. Emergency operation

When the emergency operation switch (DSW1) on the outdoor unit printed circuit board is set to emergency, the emergency operation is enabled. This allows normal operation to continue, with all abnormalities other than a discharge temperature abnormality, high pressure abnormality or overcurrent abnormality being ignored.

25.16. DIP switch settings

- Indoor unit printed circuit board (DSW1)

No.	Setting type	Factory shipment	Remarks
1	Group address setting (twin/triple address setting)	OFF	When group operation is being carried out using the r control, this address is set in order to control the orde starting for the indoor units. (If No. 8 is ON, twin/triple address setting is carried out.)
2		OFF	
3		OFF	
4		OFF	
5	Automatic restart	ON	When set to ON, operation after a power outage resum the settings which were in effect before the outage. (T backup time is semipermanent.)
6	Filter sign time	OFF	When set to ON, the filter sign times can be set to 2,50
7	Louvre control	ON	When set to OFF, louvre control is disabled.
8	Twin/triple slave unit setting	OFF	When set to ON, the unit is designated as a slave unit.

26. WIRED REMOTE CONTROL INSTALLATION MANUAL

27. WIRELESS REMOTE CONTROL INSTALLATION MANUAL

28. INSTALLATION (INDOOR UNIT)

FOUR WAY CASSETTE AIR CONDITIONERS INSTALLATION INSTRUCTIONS

REFRIGERANT
R 407C

HP	Model Name
2 HP	CS-W18BB4P
2.5 HP	CS-W24BB4P
3 HP	CS-W28BB4P
4 HP	CS-W34BB4P
5 HP	CS-W43BB4P

Precautions in terms of safety

Carry out installation work with reliability after thorough reading of this "Precautions in terms of safety".

- Precautions shown here are differentiated between **⚠ Warnings** and **⚠ Cautions**. Those that have much chances for leading to significant result such as fatality or serious injury if wrong installation would have been carried out are listed compiling them especially into the column of **⚠ Warnings**.

  However, even in the case of items which are listed in the column of **⚠ Cautions**, such items also have a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.

- As to indications with illustration

  ⚠ This mark means "Caution" or "Warning".

  ⏚ This mark means "Earth".

- After installation work has been completed, do not only make sure that the unit is free from any abnormal condition through the execution of trial run built also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with the instruction manual.

⚠ Warnings

▲ The appliance must be installed by technician, who takes into account the requirements given by ISO5149 or eventual equivalent requirements.

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself may lead to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work. Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability on a place that can sufficiently bear the weight of this unit. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accidents arisen from overturn, etc.

▲ The unit must be installed in accordance with applicable national and local regulations. All electrical work should only be carried out by qualified technician and use exclusive circuit without fail.
Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section.
Imperfect connection and fixing leads to fire, etc.

▲ If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration, there is the danger that death from suffocation may result.

▲ Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

▲ Switch off all supplies before accessing any electrical part.

▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated.

▲ Once installation work is completed, check that there are no refrigerant gas in the room that can come into contact with sparks or flames from a fan heater, stove or kitchen range, which will cause toxic gases to be generated.

▲ When performing piping work do not mix air except for specified refrigerant (R407C) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigeration cycle.

⚠ Cautions

- ▲ Carry out Earthing work. Do not connect the Earth return to the gas pipe, water line pipe, lightning rod and telephone lines. Imperfection in Earth return may lead to electric shock.
- ▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If gas leakage should arise and the gas builds up around the unit, such situation may lead to ignition.
- ▲ Mounting of the earth leakage circuit breaker is required. Omission in mounting of the earth leakage circuit breaker may lead to electric shock.
- ▲ Drain piping should be made to ensure secure drainage according to the manual for installation and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet.
- ▲ Position the indoor unit and outdoor unit power cords and indoor/outdoor unit connection cables in a way so that they are at least 1 meter away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more that 1 meter.)

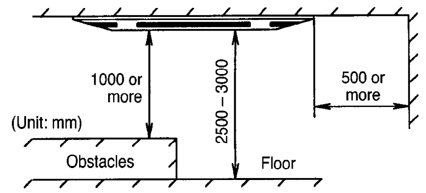
1. ACCESSORIES PACKED IN THE INDOOR UNIT CONTAINER

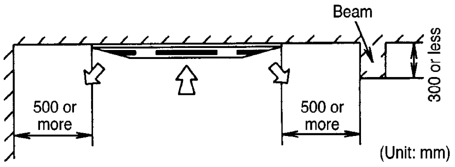
Name	Q'ty	Appearance	Purpose	Name	Q'ty	Appearance	Purpose
Drain hose with a clip	1		For drain piping	Flat washer for M10	8		For fixing the hanging bolts
Heat insulator	1		For insulating refrigerant pipe joint	Cable clamp	2		For fixing power cable
Band	2		For fastening the heat insulator	Set screw of paper template	4		Screw M5

2. SELECTING THE LOCATION FOR THE INDOOR UNIT

Provide a check port on the piping side ceiling for repair and maintenance.

- Install the indoor unit once the following conditions are satisfied and after receiving the customer's approval.
  1. The indoor unit must be within maintenance space.
  2. The indoor unit must be free from any obstacles in path of the air inlet and outlet, and must allow spreading of air throughout the room.





✳ If the height from the floor to the ceiling exceeds three meters, air flow distribution deteriorates and the effect will be decreased.

⚠ Warning

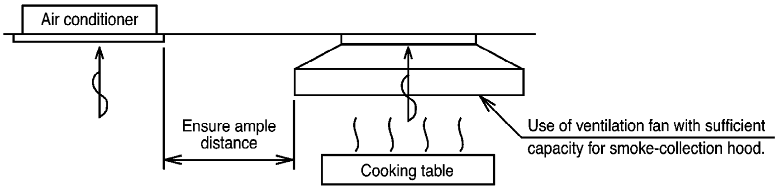
3. The installation position must be able to support a load four times the indoor unit weights.

4. The indoor unit must be away from heat and steam sources, but avoid installing it near an entrance.
5. The indoor unit must allow easy draining.
6. The indoor unit must allow easy connection to the outdoor unit.
7. Place the indoor unit according to the height from the ceiling shown in the illustration below.
8. The indoor unit must be from at least 3 m away from any noise-generating equipment. The electrical wiring must be shielded with a steel conduit.
9. If the power supply is subject to noise generation, add a suppressor.
10. Do not install the indoor unit at a laundry. Electric shocks may result.

Note ● Study thoroughly the following installation locations

1. Where in places such as restaurants and kitchens, considerable amount of oil steam and flour may adhere to the turbo fan and the fin of the heat exchanger and the drain pump, may result in heat exchange reduction, spraying, dispersing of water drops, drain pump malfunction, etc.
   In these cases, take the following actions:
   - Make sure the ventilation fan for the smoke-collection hood on a cooking table has sufficient capacity so that it draws oily steam which should not flow into the suction of the air conditioner.
   - Make enough distance from the cooking room to install the air conditioner in such place where it may not suck in oily steam.

Model Name	Height in the ceiling
CS-W18BB4P CS-W24BB4P CS-W28BB4P	250 mm or more
CS-W34BB4P CS-W43BB4P	300 mm or more


Air conditioner
Ensure ample distance
Use of ventilation fan with sufficient capacity for smoke-collection hood.
Cooking table

2. Avoid installing the air conditioner in such circumstances where cutting oil mist or iron powder exist especially in factories, etc.
3. Avoid places where inflammable gas can be generated, flows-in, contaminated, or leak.
4. Avoid places where sulphurous acid gas or corrosive gas can be generated.
5. Avoid places near high frequency generators.

3. INSTALLATION OF INDOOR UNIT

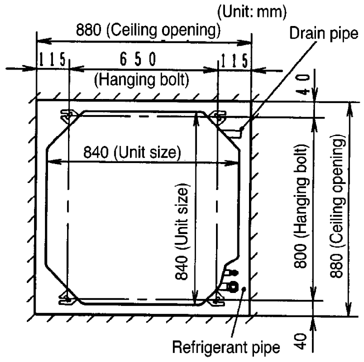
This air conditioner uses a drain up motor. Install the unit horizontally using a level gauge.

CEILING OPENING DIMENSIONS AND HANGING BOLT LOCATION

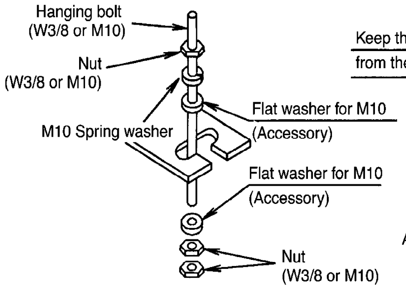
The paper template for installation may expand or shrink according to temperature and humidity.
Check on dimensions before using it.

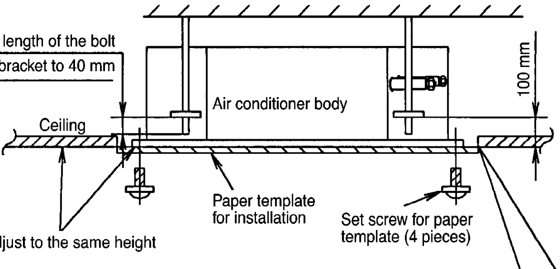
Caution	During the installation, care must be taken not to damage electric wires.

- The dimensions of the paper template for installation are the same as those of the ceiling opening dimensions.
- Be sure to discuss the ceiling drilling work with the workers concerned.


(Unit: mm)
880 (Ceiling opening)
Drain pipe
115
650
(Hanging bolt)
115
40
840 (Unit size)
840 (Unit size)
800 (Hanging bolt)
880 (Ceiling opening)
Refrigerant pipe
40

POSITIONS OF AIR CONDITIONER BODY AND CEILING SURFACE


Hanging bolt (W3/8 or M10)
Nut (W3/8 or M10)
M10 Spring washer
Flat washer for M10 (Accessory)
Flat washer for M10 (Accessory)
Nut (W3/8 or M10)


Keep the length of the bolt from the bracket to 40 mm
Ceiling
Air conditioner body
100 mm
Paper template for installation
Set screw for paper template (4 pieces)
Adjust to the same height

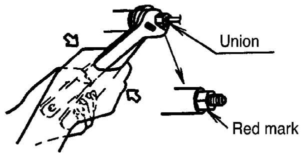
Open the ceiling board along the outer edge of the paper template.

⚠ Warning	Tighten the nuts and bolts to prevent unit from falling.

4. REFRIGERANT PIPING

Refrigerant is charged to the outdoor unit. For details, see the manual for installation work of outdoor unit. (Additional charging, etc.)

1. Brazing for piping.
   a. Perform brazing before tightening the flare nut.
   b. Brazing must be perform while blowing nitrogen gas. (This prevents generation of oxidized scale in copper pipe.)
2. When there is a lot of brazings for long piping, install a strainer at the midway of the piping. (The strainer is locally supplied.)
3. Use clean copper pipe with inner wall surface free from mist and dust. Blow nitrogen gas or air to blow off dust in the pipe before connection.
4. Form the piping according to its routing. Avoid bending and bending back the same piping point more than three times. (This will result in hardening of the pipe).
5. After deforming the pipe, align centers of the union fitting of the indoor unit and the piping, and tighten them firmly with wrenches.
6. Connect pipe to the service valve or ball valve which is located below the outdoor unit.
7. After completing the piping connection, be sure to check if there is gas leakage in indoor and outdoor connection.


Union
Red mark

- Confirm the red mark of the union (thin side) is always at lower direction after connecting piping.

Vacuum drying

After completing the piping connection, perform vacuum drying for the connecting piping and the indoor unit.

The vacuum drying must be carried out by using the service ports of both the liquid and gas side valves.

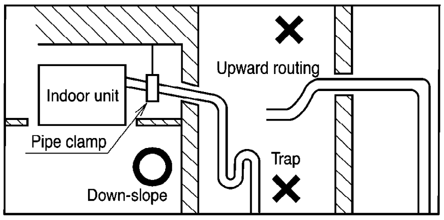
CAUTION Use two wrenches and tighten with regular torque.

Flare nut fastening torque N•m (kgf•cm)			
ø6.35 mm	18 (180)	ø15.88 mm	65 (660)
ø9.52 mm	42 (430)	ø19.05 mm	100 (1020)
ø12.7 mm	55 (560)		

Model Name	Liquid side piping	Gas side piping
CS-W18BB4P	ø6.35 mm	ø12.7 mm
CS-W24BB4P	ø6.35 mm	ø15.88 mm
CS-W28BB4P	ø9.52 mm	ø15.88 mm
CS-W34BB4P	ø9.52 mm	ø19.05 mm
CS-W43BB4P		

5. INDOOR UNIT DRAIN PIPING

- Drain piping must have down-slope (1/50 to 1/100); be sure not to provide up-and-down slope to prevent reversal flow.
- During drain piping connection, be careful not to exert extra force on the drain port at the indoor unit.
- The outside diameter of the drain connection at the indoor unit is 32 mm.

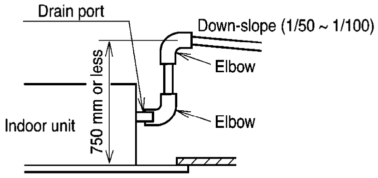

Indoor unit
Upward routing
Pipe clamp
Trap
Down-slope

Piping material: Polyvinyl chloride pipe VP-25 and pipe fittings.

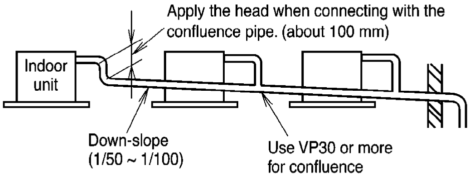
- Be sure to perform heat insulation on the drain piping.

Heat insulation material: Polyethylene foam with thickness more than 8 mm.

- The height of drain may be possible up to 750 mm.

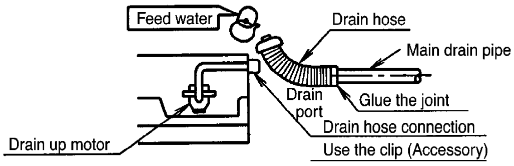

Drain port
Down-slope (1/50 ~ 1/100)
Elbow
750 mm or less
Indoor unit
Elbow

- When drain set piping, install as shown in the figure below.


Apply the head when connecting with the confluence pipe. (about 100 mm)
Indoor unit
Down-slope (1/50 ~ 1/100)
Use VP30 or more for confluence

Drain Test The air conditioner uses a drain up motor to drain water. Use the following procedure to test the drain up motor operation.

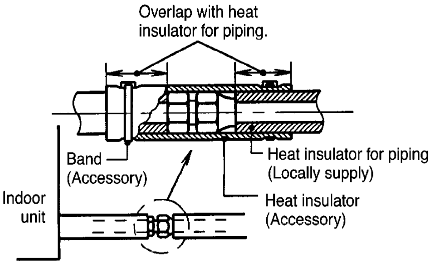
- Connect the main drain pipe to exterior and leave it provisionally until the test comes to an end.
- Feed water to the flexible drain hose and check the piping for leakage.
- Be sure to check the drain up motor for normal operating and noise when electric wiring is complete.
- When the test is completed, connect the flexible drain hose to the drain port.

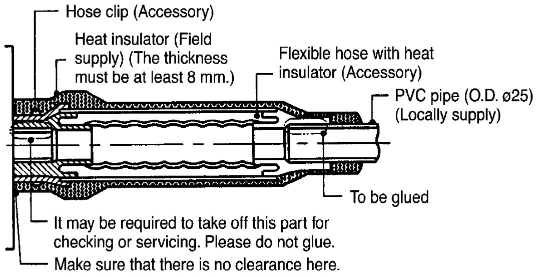

Feed water
Drain hose
Main drain pipe
Drain port
Glue the joint
Drain hose connection
Use the clip (Accessory)
Drain up motor

6. HEAT INSULATION

⚠ **Caution**	Be sure to perform heat insulation on the drain and gas piping. Imperfection in heat insulation work leads to water leakage.

1. Use the heat insulation material for the refrigerant piping which has an excellent heat-resistance (over 120°C).

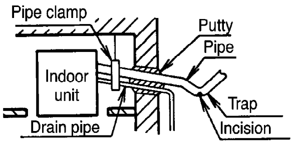

Overlap with heat insulator for piping.
Band (Accessory)
Heat insulator for piping (Locally supply)
Heat insulator (Accessory)
Indoor unit


Hose clip (Accessory)
Heat insulator (Field supply) (The thickness must be at least 8 mm.)
Flexible hose with heat insulator (Accessory)
PVC pipe (O.D. ø25) (Locally supply)
To be glued
It may be required to take off this part for checking or servicing. Please do not glue.
Make sure that there is no clearance here.

2. Precautions in high humidity circumstance.
   This air conditioner has been tested according to the "JIS Standard Conditions with Mist" and have been confirmed that there are no faults. However, if it is operated for a long time in high humid atmosphere (dew point temperature: more than 23°C), water drops are liable to fall. In this case, add heat insulation material according to the following procedure:
   - Heat insulation material to be prepared… Adiabatic glass wool with thickness 10 to 20 mm.
   - Stick glass wool on all air conditioners that are located in ceiling atmosphere.
   - In addition to the normal heat insulation (thickness: more than 8 mm) for refrigerant piping (gas piping: thick piping) and drain piping, add a further of 10 mm to 30 mm thickness material.

Wall seal

- When the outdoor unit is installed at a higher position than the indoor unit, install a trap so as not to instill rain water into the wall transmitted by the piping.
- Stuff the space among piping, the electric wire, and the drain hose with "Putty" and seal the penetration wall hole.
  Make sure that rain water do not instill into the wall.


Pipe clamp
Putty
Pipe
Indoor unit
Trap
Drain pipe
Incision

✳ Put the incision at the trap part of the heat insulator (for water drainage)

7. ELECTRICAL WIRING

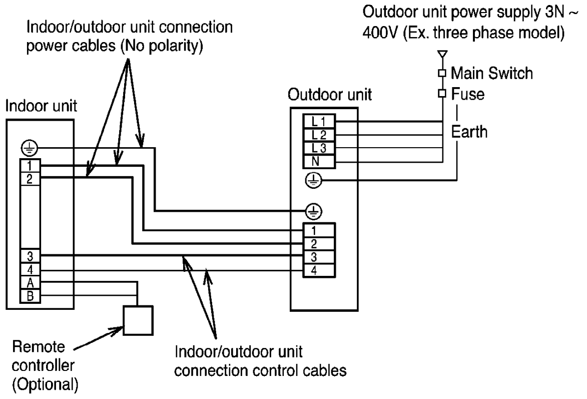
As to the main power source and cable size of outdoor unit, read the installation manual attached to the outdoor unit.

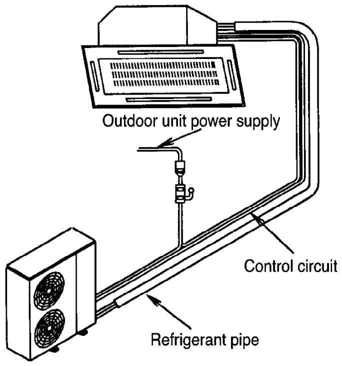
⚠ **Warning**	The units must be permanently connected to the supply cables by qualified technician. Feed the power source to the unit via a distribution switch board designed for this purpose. The switch should be disconnected at all poles with a contact separation of at least 3 mm. When the supply cable is damaged it must be replaced by qualified technician.
⚠ **Caution**	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
⚠ **Caution**	Be sure to connect the unit to secure earth connection. If the earthing work is not carried out properly, electric shocks may result. ⏚
⚠ **Warning**	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

1. Select a power source that is capable of supplying the current required by the air conditioner.
2. Always ground the air conditioner with a grounding wire and screw to meet the LOCAL REGULATIONS.
3. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
4. Be sure to turn off the main power before installing and connecting the remote controller.

Note	After turning on the power supply for both the indoor and outdoor units, do not turn the power off after at least 1 minute has passed. (This is for the system's automatic setting.) Turning off the power supply on the way may cause an abnormal operation.

- Use the standard power cables for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (245IEC57, 245IEC66)

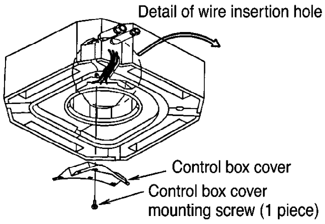

Indoor/outdoor unit connection power cables (No polarity)
Outdoor unit power supply 3N ~ 400V (Ex. three phase model)
Main Switch
Fuse
Earth
Indoor unit
Outdoor unit
L1
L2
L3
N
1
2
3
4
A
B
1
2
3
4
Remote controller (Optional)
Indoor/outdoor unit connection control cables

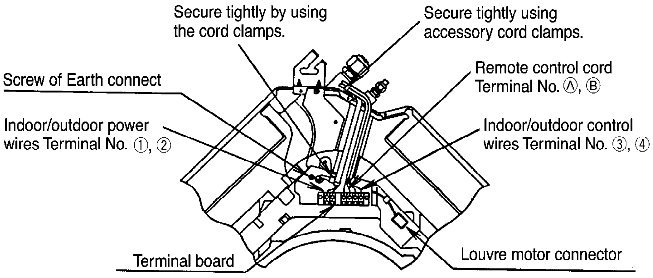

Outdoor unit power supply
Control circuit
Refrigerant pipe

CONNECTING THE WIRES TO THE CONTROL BOX

- Remove the mounting screw, remove the control box cover, and then connect the wires by following the procedure given in the illustration.

Caution	Make sure the screws of the terminal are securely tightened.


Detail of wire insertion hole
Control box cover
Control box cover mounting screw (1 piece)


Secure tightly by using the cord clamps.
Secure tightly using accessory cord clamps.
Screw of Earth connect
Remote control cord Terminal No. Ⓐ, Ⓑ
Indoor/outdoor power wires Terminal No. ①, ②
Indoor/outdoor control wires Terminal No. ③, ④
Terminal board
Louvre motor connector

8. SETTINGS

✳ Do not operate the remote controller within 1 minute after turning on the power of the indoor unit.

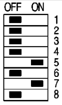
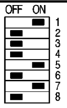
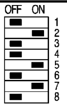
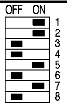
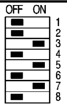
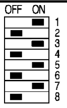
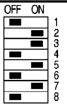
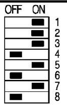
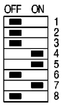
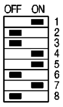
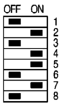
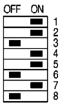
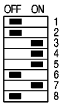
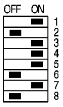
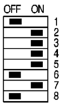
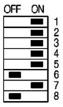
✳ When using group control with the standard type, at least 1 unit must be set at No.1 at the indoor unit.

✳ Check the settings of the indoor unit in a case where there are no display at remote controller. If there is no problem to the settings, either group control or standard type should be set at No.16 at the indoor unit before turning the power on again.

Caution	● Do not connect to Timer Setting, Fan Power (Connector CNT1 on printed circuit board) except when the relay, or the circuit board may be broken.

- All sets in the group which uses the same remote controller thermistor settings can be controlled by the same remote controller thermistor.
- Up to a maximum of 16 indoor units can be connected at the time of group control. (Do not connect heat pump unit with cooling only unit.)
- Indoor unit No. will be set automatically at the time of group control. However, which indoor unit uses which number is unknown.

  Indoor unit No. is also possible to be set manually with DIP switches. Since manual address setting has priority to automatic address setting, to perform automatic address setting after doing manual setting, turn off all DIP switches from No. 1 to No. 4, and then stop the operationThen press three switches such as [AIR SWING AUTO] • [OPERATION] • [A/C No.] at the same time. (Do not use manual address setting and automatic address setting together.)
- Centralized control is possible for master unit and slave unit at the time of group control.

Manual Setting	Indoor unit No.	1	2	3	4	5	6	7	8
	DIP switch (DSW1) address setting on indoor unit printed circuit board.								
	A/C No. setting	Unnecessary operation	1-ON	2-ON	1, 2-ON	3-ON	1, 3-ON	2, 3-ON	1, 2, 3-ON
	Indoor unit No.	9	10	11	12	13	14	15	16
	DIP switch (DSW1) address setting on indoor unit printed circuit board.								
	A/C No. setting	4-ON	1, 4-ON	2, 4-ON	1, 2, 4-ON	3, 4-ON	1, 3, 4-ON	2, 3, 4-ON	1, 2, 3, 4-ON

(Remote Controller address setting)

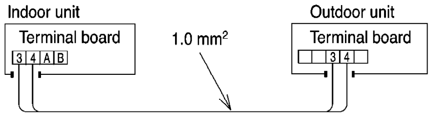
(Refer to the Installation Manual which is provided with the remote controller for details.)

- Two remote controllers (including the wireless remote controller) can be connected. However, remote control thermistor setting is not possible.
- As for (master/slave) setting of remote controller, the automatic setting and manual setting are possible. Since manual setting has priority.
- Two remote controllers, which both are wireless, cannot be connected.

Indoor/outdoor unit connection control cables

- Route the connection cables apart from the power cables to prevent abnormal operations (noise can be generated).

The length of the control line can be up to 200 m.


Indoor unit
Outdoor unit
Terminal board
3 4 A B
1.0 mm²
Terminal board
3 4

9. INSTALLATION OF DECORATIVE PANEL

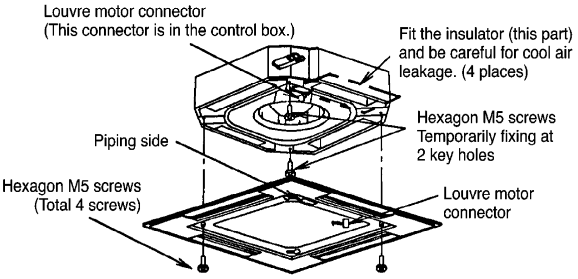
Always remove the paper template before installing the decorative panel.

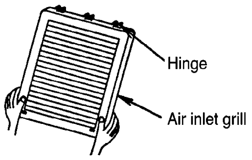
The decorative panel has its installation direction.
Confirm the direction with the display of the piping side.

1. Temporarily fix two decorative panel fixing screws (hexagon M5 screw) to the units body. (Tighten to about 10 mm in length). The fixing screws (hexagon M5 screw) are attached to the decorative panel.
2. Remove the air inlet grill from the decorative panel. (Remove the hook for the air inlet grill string.)
3. Hook the decorative panel key hole (⊂⊃) on the screws fixed in step above, and slide the panel so that the screws reach the key hole edge.
4. Retighten fully two temporarily fixed screws and other two screws. (Total 4 screws)
5. Connect the louvre motor connector.
6. After tightening these screws, install the air inlet grill (including the air filter).

⚠ **Caution**	Be sure to connect louvre motor connector. Imperfect connection leads to fire, electric shock, etc.

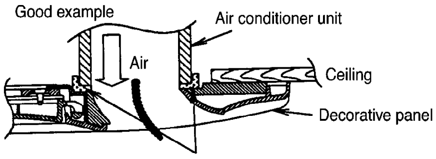
⚠ **Warning**	Be sure to hook the air inlet grill string, to prevent grill from falling and causing injury from it.


Louvre motor connector
(This connector is in the control box.)
Fit the insulator (this part) and be careful for cool air leakage. (4 places)
Piping side
Hexagon M5 screws Temporarily fixing at 2 key holes
Hexagon M5 screws (Total 4 screws)
Louvre motor connector

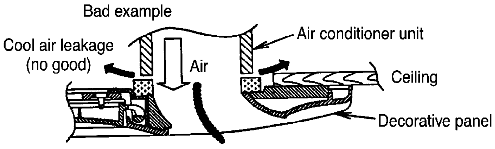

Hinge
Air inlet grill

✳ Hang the hinge on the hole of the decorative panel. (The direction of the installation is free.)

⚠ Caution	Securely install the decorative panel. Leakage of cool air causes condensation.


Good example
Air conditioner unit
Air
Ceiling
Decorative panel

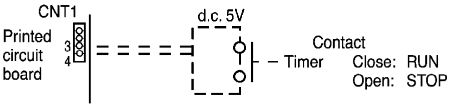
Fit the insulator (this part) and be careful for cool air leakage.


Bad example
Cool air leakage (no good)
Air conditioner unit
Air
Ceiling
Decorative panel

10. TIMER AND FAN OUTPUT

■ Connect the wires from the connector (CNT1) on printed circuit board.

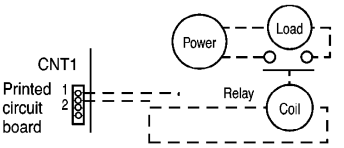
Timer setting


CNT1
Printed circuit board
3
4
d.c. 5V
Contact
– Timer
Close: RUN
Open: STOP

Connect to another circuit contact of the timer.

Connect the timer cord to connector (CNT1 ③,④) on PCB.

Fan Output (synchronization with fan) d.c. 12V 75mA


Power
Load
CNT1
Printed circuit board
1
2
Relay
Coil

Connect the timer cord to connector (CNT1 ①,②) on PCB.

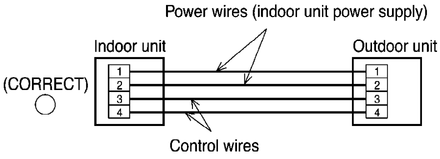
11. PRECAUTIONS IN TEST RUN

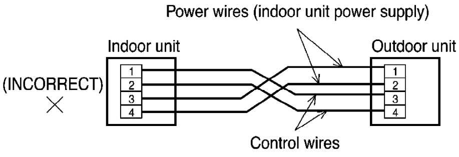
- The initial power supply must provide at least 90% of the rated voltage. Otherwise, the air conditioner may not operate.

- Test operation can be carried out using the remote control unit or at the outdoor unit. (If carrying out test operation at the outdoor unit, refer to “TEST OPERATION” in the outdoor unit installation manual.)
- If using the remote control unit to carry out test operation, follow the procedure given below.

- First, press the OFF/ON (Ⓘ) button.
- Then press the TEST RUN button within 1 minute of pressing the OFF/ON (Ⓘ) button.
- Next, select the operation modes.
- The temperature of the indoor unit pipes will be shown on the temperature setting display. (At the start of the test operation, it may take up to 1 minute for air conditioner number, switching time and other displays to appear.)
- After operation modes have been selected, stop the compressor for a moment.
- Press the OFF/ON (Ⓘ) button of the TEST RUN button once more to cancel test operation mode.

NOTE 1 These units are equipped with connection error prevention circuits. If the units do not operate, it is possible that the connection error prevention circuits have been operated. In such cases, check that the power wires (connected to terminals ① and ②) and the control wires (connected to terminals ③ and ④) are connected correctly. If they are connected incorrectly, connect them correctly. Normal operation should then commence.


Power wires (indoor unit power supply)
Indoor unit
Outdoor unit
(CORRECT)
○
1
2
3
4
Control wires


Power wires (indoor unit power supply)
Indoor unit
Outdoor unit
(INCORRECT)
×
1
2
3
4
Control wires

NOTE 2 Do not short the remote control unit wires to each other. (The protection circuit will be activated and the units will not operate.) Once the cause of the short is eliminated, normal operation will then be possible.

NOTE 3 When running the units in heating mode during test operation, be sure to run the units in cooling mode first before selecting this mode. If heating mode is selected first, it may cause problems with operation of the compressor. (Heat pump model only.)

NOTE 4 Test operation should be carried out for a minimum of 5 minutes. (Test operation will be cancelled automatically after 30 minutes.)

NOTE 5 Test operation mode should always be cancelled once test operation itself has been completed.

12. CHECK THE FOLLOWING ITEMS WHEN INSTALLATION IS COMPLETE

- After completing work, be sure to measure and record trial run properties, and store measuring data, etc.
- Measuring items are room temperature, outside temperature, suction temperature, blow out temperature, wind velocity, wind volume, voltage, current, presence of abnormal vibration and noise, operating pressure, piping temperature, compressive pressure, airtight pressure.
- As to the structure and appearance, check the following items.

☐ Is circulation of air adequate?
☐ Is draining smooth?
☐ Is heat insulation complete (refrigerant and drain piping)?
☐ Is there any leakage of refrigerant ?
☐ Is remote controller switch operated?
☐ Is there any faulty wiring?
☐ Are the terminal screws loosened?
M3…69-98N•cm {7-10kgf•cm} M4…157-196N•cm {16-20kgf•cm}
M5…196-245N•cm {20-25kgf•cm}

13. HAND OVER

- Teach the customer the operation and maintenance procedures, using the operation manual (air filter cleaning, temperature control, etc.)

As to parts to be sold separately

- With regards to installation of the parts sold separately, follow the installation manual which is provided with the parts sold separately.

As for work specifications of the outdoor unit, read the OUTDOOR UNIT INSTALLATION MANUAL attached to the outdoor unit.

29. INSTALLATION (OUTDOOR UNIT)

AIR CONDITIONERS OUTDOOR UNIT INSTALLATION INSTRUCTIONS

REFRIGERANT
R 407C

HP	Model Name	
2 HP	CU-W18BBP5	CU-V18BBP5
2.5 HP	CU-W24BBP5	CU-V24BBP5 CU-V24BBP8
3 HP	CU-W28BBP5 CU-W28BBP8	CU-V28BBP5
4 HP	CU-W34BBP8	CU-V34BBP8
5 HP	CU-W43BBP8	CU-V43BBP8

Precautions in terms of safety

Carry out installation work with reliability after thorough reading of this “Precaution in terms of safety”.

- Precautions shown here are differentiated between ⚠ Warnings and ⚠ Cautions. Those that have much chances for leading to significant result such as fatality or serious injury if wrong installation would have been carried out are listed compiling them especially into the column of ⚠ Warnings.

  However, even in the case of items which are listed in the column of ⚠ Cautions, such items also have a chance for leading to significant result depending on the situations.
  In either case, important descriptions regarding the safety are listed, then observe them without fail.
- As to indications with illustration

  ⚠ This mark means “Caution” or “Warning”.　　⏚ This mark means “Earth”.
- After installation work has been completed, do not only make sure that the unit is free from any abnormal condition through the execution of trial run but also explain how to use and how to perform maintenance of this unit to the customer according to the instruction manual.
  In addition, request the customer to keep this manual for installation work together with instruction manual.

Warnings

▲ The appliance must be installed by technician, who takes into account the requirements given by ISO5149 or eventual equivalent requirements.

▲ As to installation, request the distributor or vendor to perform it. Imperfection in installation caused by that having been carried out by the customer himself may lead to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability according to this manual for installation work.
Imperfection in installation leads to water leakage, electric shock, fire, etc.

▲ Carry out the installation work with reliability on the place that can bear the weight of this unit sufficiently. Insufficient strength leads to injury due to falling of the unit.

▲ Carry out predetermined installation work in preparation for strong wind such as typhoon, earthquake. Imperfection in installation work may lead to accidents arisen from overturn, etc.

▲ The unit must be installed in accordance with applicable national and local regulations.
Any electrical work should only be carried out by qualified technician and use exclusive circuits without fail.
Presence of insufficient capacity in power circuit or imperfection in execution leads to electric shock, fire, etc.

▲ Wiring shall be connected securely using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section.
Imperfect connection and fixing leads to fire, etc.

▲ If installing inside a small room, measures should be taken to prevent refrigerant levels from building up to critical concentrations in the event of a refrigerant leak occurring. Please discuss with the place of purchase for advice on what measures may be necessary to prevent critical concentrations being exceeded. If the refrigerant leaks and reaches critical concentration levels, there is the danger that death from suffocation may result.

▲ Securely attach the protective covers for the outdoor unit connection cables and power cord so that they do not lift up after installation. If the covers are not properly attached and installed, the terminal connections may overheat, and fire or electric shock may result.

▲ Switch off all supplies before accessing any electrical part.

⚠ Warnings	⚠ Cautions
▲ If refrigerant gas escapes during installation, ventilate the affected area. If the refrigerant gas comes into contact with sparks or naked flames, it will cause toxic gases to be generated. ▲ Once installation work is completed, check that there are no refrigerant gas in the room that can come into contact with sparks or flames from a fan heater, stove or kitchen range, which will cause toxic gases to be generated. ▲ When performing piping work do not mix air except for specified refrigerant (R407C) in refrigeration cycle. It causes capacity down, and risk of explosion and injury due to high tension inside the refrigerant cycle.	▲ Carry out Earthing work. Do not connect the Earth return to the gas pipe, water line pipe, lightning rod and telephone lines. Imperfection in Earth return may lead to electric shock. ▲ Do not install the unit at the place where the possibility of inflammable gas leakage exists. If such gas leakages should arise and the gas builds up around the unit, such situation may lead to ignition. ▲ Mounting of the earth leakage circuit breaker is required. Omission in mounting of the earth leakage circuit breaker may lead to electric shock. ▲ Drain piping should be made to ensure secure drainage according to the manual for installation work and carry out the thermal insulation to prevent the occurrence of condensation. Imperfection in piping work leads to water leakage and may cause the house and property, etc. to become wet. ▲ Position the indoor unit and outdoor unit, power cords and indoor/outdoor unit connection cables in a way so that they are at least 1 metre away from televisions and radios. This is to avoid problems such as interference with picture and/or sound. (However, note that depending on the electromagnetic wave conditions, interference may still occur even if the separation distance is more than 1 metre.)

1. ACCESSORIES SUPPLIED WITH OUTDOOR UNIT

- The following parts are supplied as accessories with each outdoor unit.
  Check that all accessory parts are present before installing the outdoor unit.

Part name	Q'ty	Diagram	Application
Protective bushing	2		For protecting electrical wires
Banding strap	3		For tying electrical wires together

Heat pump-types only

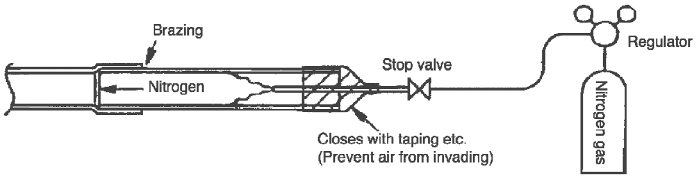
Part name	Q'ty	Diagram	Application
Drain elbow AS	1		For connecting the drain pipe (with ring seat)

2. BEFORE INSTALLATION WORK

- This product is using new refrigeration (R407C). The basic way of installation work is the same as usual, but water and impurities should be controlled more strictly than before due to characteristic of refrigerating machine oil. Therefore, selection of materials to use and processing, storing and brazing need appropriate construction and control.
  1. Tools and materials.
     There are tools and materials for both new refrigeration and usual refrigeration you can use together and for either two of them you can use. Use the below for new refrigeration.
     - Vacuum pump (with back flow preventor system)
     - Gauge manifold
     - Gas leakage detection warning device
     - Charge hose

  2. Installation work
     ① Brazing work
     Brazing work needs replacing air inside pipe with nitrogen gas in order to prevent oxidization scale from occurring. This is called nitrogen replacement, and one of very important work in brazing refrigerant piping. (Oxidation preventive is not possible to use)

(Work method)

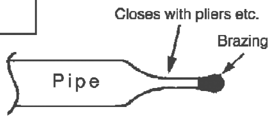


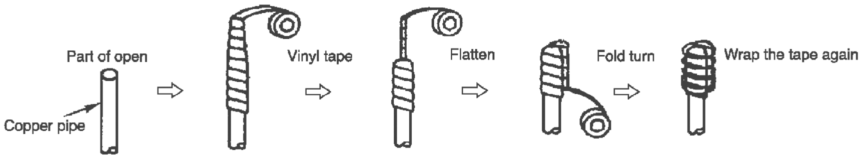
② Prevention measure for refrigerant piping

Prevention measure for refrigerant piping is very important work to prevent water-dust-rubbish from getting in. All piping terminals needs sealing such as shown below.

Place	Period of work	Method of seal
Outside	More than 1 month	Pinch
	Less than 1 month	Pinch or taping
Inside	Not specified	

- How to pinch
  Close terminal part of piping with pliers and seal the gap with brazing.
- How to tape
  Seal terminal part of piping with vinyl tape.


Closes with pliers etc.
Brazing
Pipe


Part of open
Copper pipe
Vinyl tape
Flatten
Fold turn
Wrap the tape again

3. Vacuum pumping
The purpose of vacuum pumping work is to remove and dry air inside the piping or nitrogen at air tightness test. Perform the work carefully.

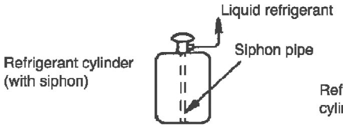
⚠ Caution	Use the vacuum pump with the backflow prevention mechanism to prevent backflow of oil.

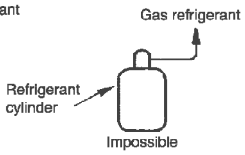
Vacuuming time	60 minutes or more

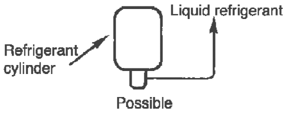
※Vacuum pump
capacity
60 l/min or more

4. Refrigerant filling
Refrigerant filling must be done in the state of liquid refrigerant. If this is done in gas refrigerant, the balance of refrigerant composition will collapse and damage the operation.

For the use of a gas cylinder without siphon inside, turn it upside down and use it.
(We recommend manifold with sight glass.)


Liquid refrigerant
Siphon pipe
Refrigerant cylinder
(with siphon)


Gas refrigerant
Refrigerant
cylinder
Impossible

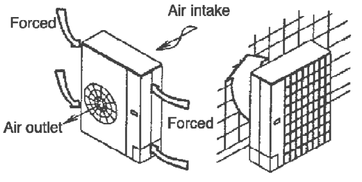

Liquid refrigerant
Refrigerant
cylinder
Possible

CAUTION Do not use a "CHARGE CYLINDER".

⚠ **Caution**	As a rule, please collect all existing refrigerants in the system outside the system when the refrigerant leakage occurs by the system. After that, please fill new refrigerant of a regulated amount again.

3. SELECTING THE OUTDOOR UNIT INSTALLATION LOCATIONS

- Select location which satisfies the following condition, and then confirm with the customer that such a place is satisfactory before installing the outdoor unit.


Forced
Air intake
Air outlet
Forced

1. There should be sufficient ventilation.
2. The outdoor unit should be sheltered as much as possible from rain and direct sunlight, and the air should be able to move around so that hot and cold air do not build up.
3. There should not be animals or plants near the air outlet which could be adversely affected by hot or cold air coming out from the unit.
4. The outlet air and operating noise should not be a nuisance to other occupants nearby.
5. The location should be able to withstand the full weight and vibration of the outdoor unit, and it should also be level and safe for the unit to be installed.
6. The intake and outlet should not be covered.
7. There should not be danger of flammable gas or corrosive gas leaks.
8. There should be as little back-ventilation (air blowing directly onto the fan) as possible.
   (If strong wind blows directly onto the fan, it may cause problems with normal operation.)
   - If you know which direction the prevailing wind comes from during the operating season, set the outdoor unit at a right-angle to this wind direction, or so that the air outlet faces toward a wall or fence.
   - If there are obstructions near the outdoor unit and the wind direction is not constant, install an optional air guider.
9. Do not allow any obstacles near the outdoor unit which will interfere with air flow around the air intake and air outlet.
10. If installing in a location which is prone to snowfall, place the installation base as high as possible, and be sure to install a roof or enclosure which does not allow snow to accumulate.
11. Avoid installing the unit in places where petroleum products (such as machine oil), salinity, sulphurous, gases or high-frequency noise are present.
12. Be sure to leave enough space around the outdoor unit to maintain proper performance and to allow access for routine maintenance.
    - Allow enough space from any obstacles as shown in Fig.1.2 below in order to prevent short-circuits from occurring.
      (If installing more than one outdoor unit, make the necessary space available as outlined in 14.)
      However, there should be at least 1 metre of free space above the unit.
    - The height of any obstacles at the air intake and outlet sides should not be greater than the height of the outdoor unit.

- When facing the air intake side toward a wall.
- When facing the air outlet side toward a wall.
- When using an optional air guider for outdoor units.

Fig. 1

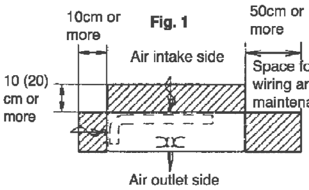

10cm or more
50cm or more
Air intake side
Space for piping, wiring and maintenance
10 (20) cm or more
Air outlet side

Fig. 2

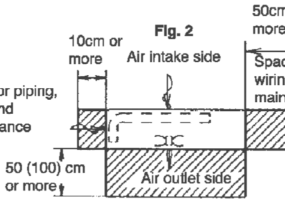
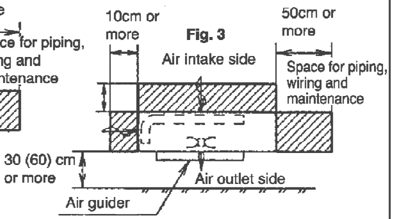

10cm or more
Air intake side
50cm or more
Space for piping, wiring and maintenance
50 (100) cm or more
Air outlet side

Fig. 3


10cm or more
Air intake side
50cm or more
Space for piping, wiring and maintenance
30 (60) cm or more
Air outlet side
Air guider

✻ Maintain sufficient space above the unit.

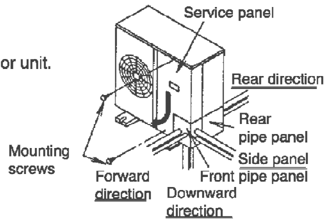
13. If is not possible to leave 50 (100)cm at the air outlet side as shown in Fig. 2, the installation method shown in Fig. 3 can be used if an optional air guider for outdoor units is installed. Install according to the instructions given in the separate instruction manual.

2. Local pipes can project in any of four directions.
   - Make holes in the pipe panels for the pipes to pass through.
   - Be sure to install the pipe panels to prevent rain from getting inside the outdoor unit.

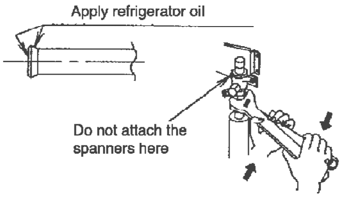
     [Removing the service panel].

     (1) Remove the two mounting screws.

     (2) Slide the service panel downward to release the pawls.
     After this, pull the service panel toward you to remove it.



3. Notes when connecting the refrigerant pipes.
   - Use clean copper, pipes with no water or dust on the insides.
   - Use phosphorus-free, unjointed copper pipes for the refrigerant pipes.
   - If it is necessary to cut the refrigerant pipes, be sure to use a pipe cutter, and use compressed nitrogen or an air blower to clean out any foreign particles from inside the pipe.
   - Be careful not to let any dust, foreign materials or water get inside the pipes during connection.
   - If bending the pipes, allow as large a bending radius as possible. Do not flex the pipes any more than necessary.
   - If joining pipe ends, do so before tightening the flare nut.
   - Always blow the pipe end with nitrogen while joining pipe ends.
     (This will prevent any oxide scaling from occurring inside the pipe.)
   - If using long pipe lengths with several joined pipe ends, insert strainers inside the pipes.(Strainers are not supplied.)
   - When tightening the flare nuts, coat the flares (both inside surfaces) with a small amount of refrigerator oil, and screw in about 3-4 turns at first by hand.
   - Refer to the following table for the tightening torques. Be sure to use two spanners to tighten.
     (If the nuts are overtightened, it may cause the flares to break or leak.)



Flare nut fastening torque N•m (kgf•cm)			
ø6.35mm	18 (180)	ø15.88mm	65 (660)
ø9.52mm	42 (430)	ø19.05mm	100 (1020)
ø12.7mm	55 (560)		

4. After piping connection has been completed, make sure that the joint areas of the indoor and outdoor units are free from gas leakage by the use of nitrogen, etc.
5. Air purge within connection piping shall be carried out by evacuation.

6. HEAT INSULATION

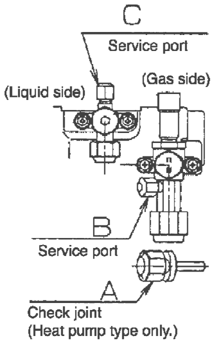
⚠ Caution	Use a material with good heat-resistant properties as the heat insulation for the pipes. Be sure to insulate both the gas-side and liquid-side pipes. If the pipes are not adequately insulated, condensation or water leakages may occur.

Liquid-side pipes	Material that can withstand 120°C or higher
Gas-side pipes	

7. CHARGING WITH REFRIGERANT

- At the time of shipment from the factory, this unit is charged with enough refrigerant for an equivalent pipe length of 30m. If the equivalent pipe length used will be 30m or less, no additional charging will be necessary.
- If the equivalent pipe length will be between 30 and 50m (40m), charge with additional refrigerant according to the equivalent length given in the table below.
  - For standard type

Model Name		Additional charging amount	Equivalent length
CU-W18BBP5	CU-V18BBP5	0.02kg/m	40m
CU-W24BBP5	CU-V24BBP5 CU-V24BBP8	0.02kg/m	50m
CU-W28BBP5 CU-W28BBP8 CU-W34BBP8 CU-W43BBP8	CU-V28BBP5 CU-V28BBP8 CU-V34BBP8 CU-V43BBP8	0.05kg/m	



- Pump down operation
  - Operate the pump down according to the following procedures.

Procedure	Notes
1. Confirm the valve on the liquid side and the gas side is surely open.	
2. Press the COOL switch on outdoor printed board for 1 second or more.	Perform the cooling operation for five minutes or more.
3. Set the liquid side 3-way valve to the close position and until when the gauge indicates at 0.1Mpa (1kg/cm²G).	When the valve is shut halfway, the compressor is occasionally damaged.
4. Immediately set the gas side valve to the close position and press the COOL switch (stop the operation unit).	

The pump down is completed above.

CHECKING THE PRESSURE

Check the pressure at the service port on the valve and the check joint where the pipe ends have been joined according to the table at below.

Heat pump model

	A	B
During cooling operation	High pressure	Low pressure
During heating operation	Low pressure	High pressure

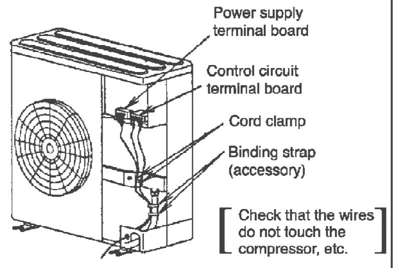
Cooling model only

	C	B
During cooling operation	High pressure	Low pressure

8. ELECTRICAL WIRING

⚠ Warning	The units must be connected to the supply cables for fixed wiring by qualified technician. Feed the power source to the unit via a distribution switch board designed for this purpose, the switch should disconnected all poles with a contact separation of at least 3mm. When the supply cable is damaged, it must be replaced by qualified technician.
⚠ Caution	Be sure to install a current leakage breaker, main switch and fuse to the main power supply, otherwise electric shocks may result.
⚠ Caution	Be sure to connect the unit to secure earth connection. If the earthing work is not carried out properly, electric shocks may result. ⏚
⚠ Warning	Wiring shall be connected securely by using specified cables and fix them securely so that external force of the cables may not transfer to the terminal connection section. Imperfect connection and fixing leads to fire, etc.

- Connect the power supply wiring and indoor/outdoor unit connection wiring according to the electrical circuit diagram instructions.
- Clamp the wires securely to the terminal connections using cord clamps so that no undue force is placed on the wires.
- Once all wiring work has been completed, tie the wires and cords together with the binding strap so that they do not touch other parts such as the compressor and pipes.


Power supply terminal board
Control circuit terminal board
Cord clamp
Binding strap (accessory)
Check that the wires do not touch the compressor, etc.

1. Connect the power supply line to a 3-phase/380-415V (or single-phase 220-240V) power supply.

   If the phase is reversed, the self-diagnosis function will be activated and the unit will not operate. In such cases, switch over any two of the power supply wires (L1,L2,L3) (3-phase models only).

   (Never operate the unit by pressing the electromagnetic switch.)
2. The equipment shall be connected to a suitable mains network with a main impedance less than the valve indicated in the table of power supply specifications.
3. Be sure to connect the wires correctly to terminal board with connecting the crimp type ring terminal to the wires.
4. The binding screws inside the power supply box may become loosened due to vibration during transportation, so check that they are tightened securely.
5. Tighten the binding screws to the specified torque while referring to the table below.
6. If connecting two separate wires to a single crimped terminal, place the two crimped terminal wires together as shown in Fig. A. (If the arrangement shown in Fig. B is used, poor contacts or contact damage may result.)
7. If momentarily turning on the power supply for both the indoor and outdoor units, do not turn the power off again until at least 1 minute has passed (except when a reversed phase has been detected).

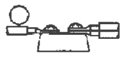


Fig A (OK)

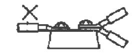


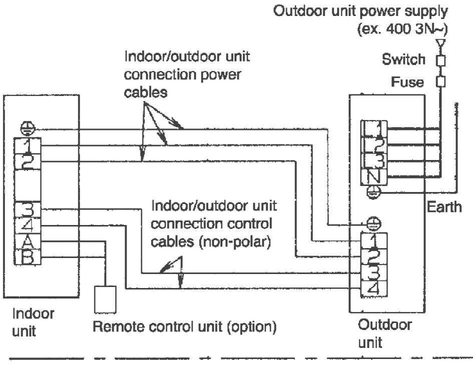
Fig B (not OK)

⚠ Warning	Use only the specified cables for wiring connections. Connect the cable securely, and secure them properly so that no undue force will be applied to the terminal connections. If the terminals are loose or if the wires are not connected securely, fire may result.

Terminal screw	Tightening torque N•cm {kgf•cm}
M3	69~98 {7~10}
M4	157~196 {16~20}
M5	196~245 {20~25}

Refer to the following diagrams for details on how to connect the power supply cables and indoor/outdoor unit connection cables.

OUTDOOR UNIT/3-PHASE MODEL


Outdoor unit power supply (ex. 400 3N~)
Indoor/outdoor unit connection power cables
Switch
Fuse
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3
4
A
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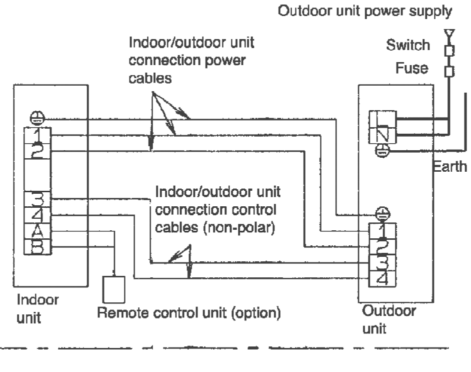
2
3
N
⊕
Earth
Indoor/outdoor unit connection control cables (non-polar)
⊕
1
2
3
4
Indoor unit
Remote control unit (option)
Outdoor unit

OUTDOOR UNIT/SINGLE-PHASE MODEL


Outdoor unit power supply
Indoor/outdoor unit connection power cables
Switch
Fuse
⊕
1
2
3
4
A
B
L
N
⊕
Earth
Indoor/outdoor unit connection control cables (non-polar)
⊕
1
2
3
4
Indoor unit
Remote control unit (option)
Outdoor unit

- Power supply specifications

Model name			Leakage current breaker (A)	Circuit breaker (Minimum Capacity)		Minimum power supply cables	4mm² cable based on length (m)	Indoor/outdoor unit connection power cables (terminals ① ② ⏚)	Indoor/outdoor unit connection power cables (terminals ③ ④)	Maximum permissible impedance (Ω)
				Switch (A)	Fuse (A)					
CU-W18BBP5	CU-V18BBP5	220V-240V~	20	20	20	4mm²	17	2.5mm² x 3	1.0mm² x 2	0.04
CU-W24BBP5	CU-V24BBP5	220V-240V~	30	30	30		13			0.04
	CU-V24BBP8	380V-415V 3N~	10	10	10		41			0.025
CU-W28BBP5	CU-V28BBP5	220V-240V~	30	30	30		11			0.04
CU-W28BBP8	CU-V28BBP8	380V-415V 3N~	10	10	10		38			0.025
CU-W34BBP8	CU-V34BBP8	380V-415V 3N~	15	15	15		25			0.025
CU-W43BBP8	CU-V43BBP8	380V-415V 3N~	20	20	20		20			0.025

NOTE

⏚ 1. Where ground work (earth) is carried out, do not connect the ground return to the gas pipe, water line pipe, grounded circuit of the telephone and lightning rod, or ground circuit of other product in which earth leakage breaker is incorporated. (Such action is prohibited by statute, etc.)

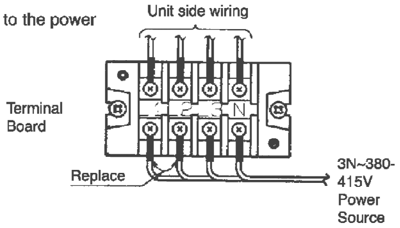
! 2. In order to prevent malfunction (noise generation) of the equipment, carry out the wiring of the control cable for indoor and outdoor units (signal cable) isolating it from other power cable with separate cable.

3. Use the standard power supply cables for Europe (such as H05RN-F or H07RN-F which conforms to CENELEC (HAR) rating specifications) or use the cables based on IEC standard. (245IEC57, 245IEC66)

4. Select the particular size of electrical wire for power supply cables in accordance with the standards of the given nation and region.

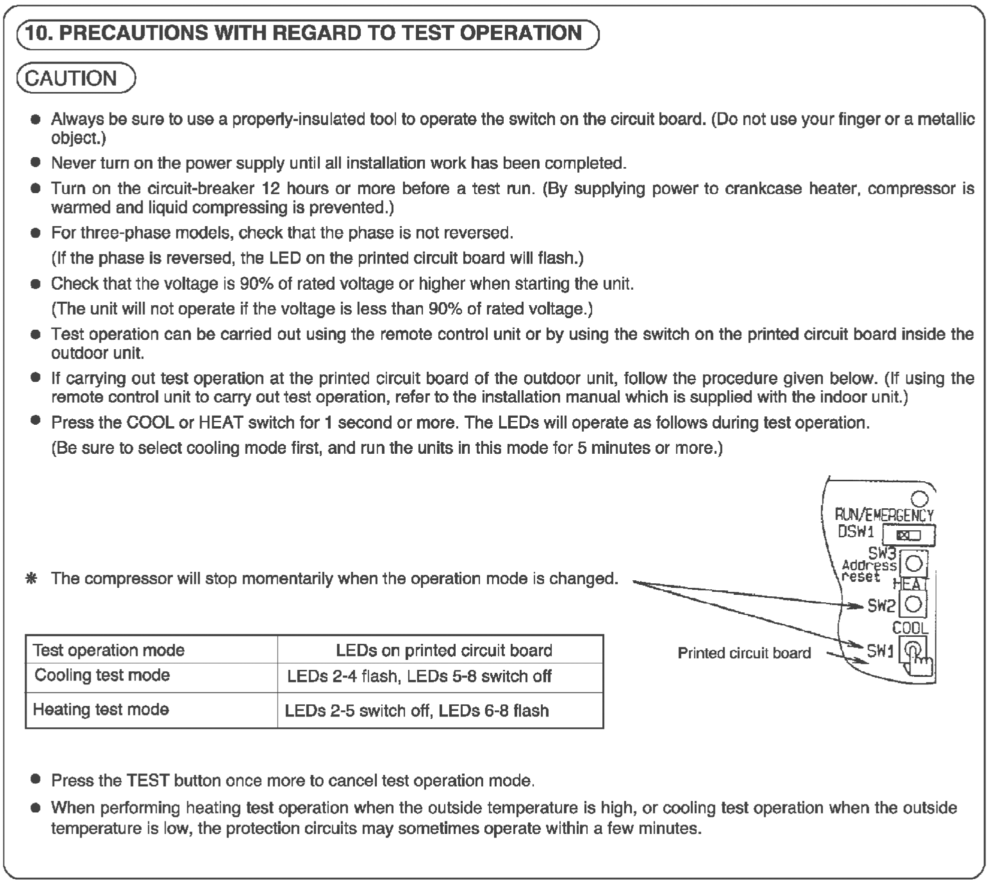
9. CONNECTING POWER SUPPLY CABLES

- If reversed phase is detected and the self-diagnosis function is activated after connecting the power supply cables, carry out the following operation.
  Switch over any two of the power supply wires which are connected to the power supply terminal board.
  Turn off the main power supply before correcting the phase.



CAUTION

- Never operate the unit by pressing the electromagnetic switch.
- Never correct the phase by switching over any of the wires inside the unit.



10. PRECAUTIONS WITH REGARD TO TEST OPERATION

CAUTION

- Always be sure to use a properly-insulated tool to operate the switch on the circuit board. (Do not use your finger or a metallic object.)
- Never turn on the power supply until all installation work has been completed.
- Turn on the circuit-breaker 12 hours or more before a test run. (By supplying power to crankcase heater, compressor is warmed and liquid compressing is prevented.)
- For three-phase models, check that the phase is not reversed.
  (If the phase is reversed, the LED on the printed circuit board will flash.)
- Check that the voltage is 90% of rated voltage or higher when starting the unit.
  (The unit will not operate if the voltage is less than 90% of rated voltage.)
- Test operation can be carried out using the remote control unit or by using the switch on the printed circuit board inside the outdoor unit.
- If carrying out test operation at the printed circuit board of the outdoor unit, follow the procedure given below. (If using the remote control unit to carry out test operation, refer to the installation manual which is supplied with the indoor unit.)
- Press the COOL or HEAT switch for 1 second or more. The LEDs will operate as follows during test operation.
  (Be sure to select cooling mode first, and run the units in this mode for 5 minutes or more.)

❋ The compressor will stop momentarily when the operation mode is changed.

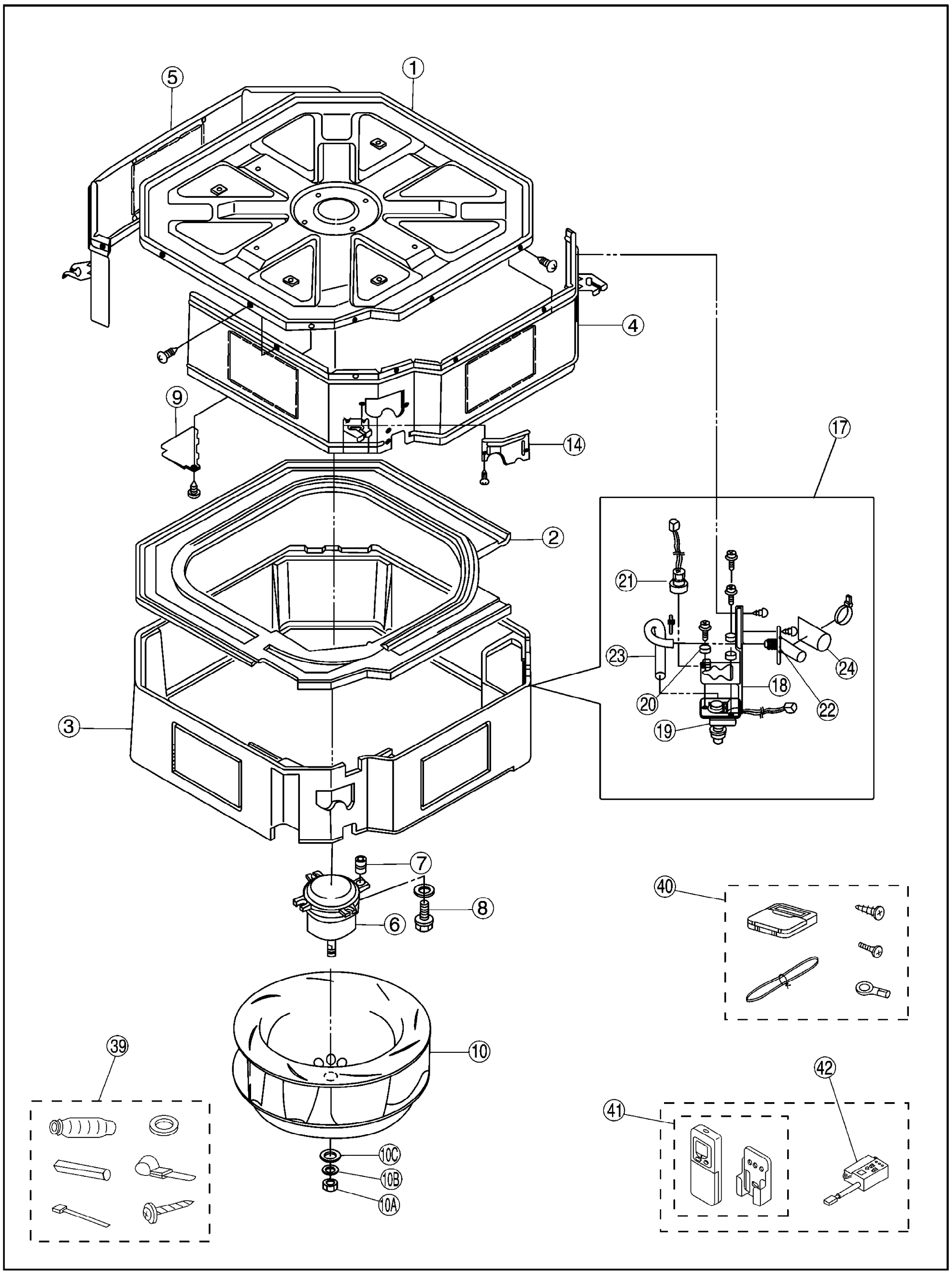
Test operation mode	LEDs on printed circuit board
Cooling test mode	LEDs 2-4 flash, LEDs 5-8 switch off
Heating test mode	LEDs 2-5 switch off, LEDs 6-8 flash

- Press the TEST button once more to cancel test operation mode.
- When performing heating test operation when the outside temperature is high, or cooling test operation when the outside temperature is low, the protection circuits may sometimes operate within a few minutes.

30. REPLACEMENT PARTS

30.1. INDOOR UNIT

All indoor units



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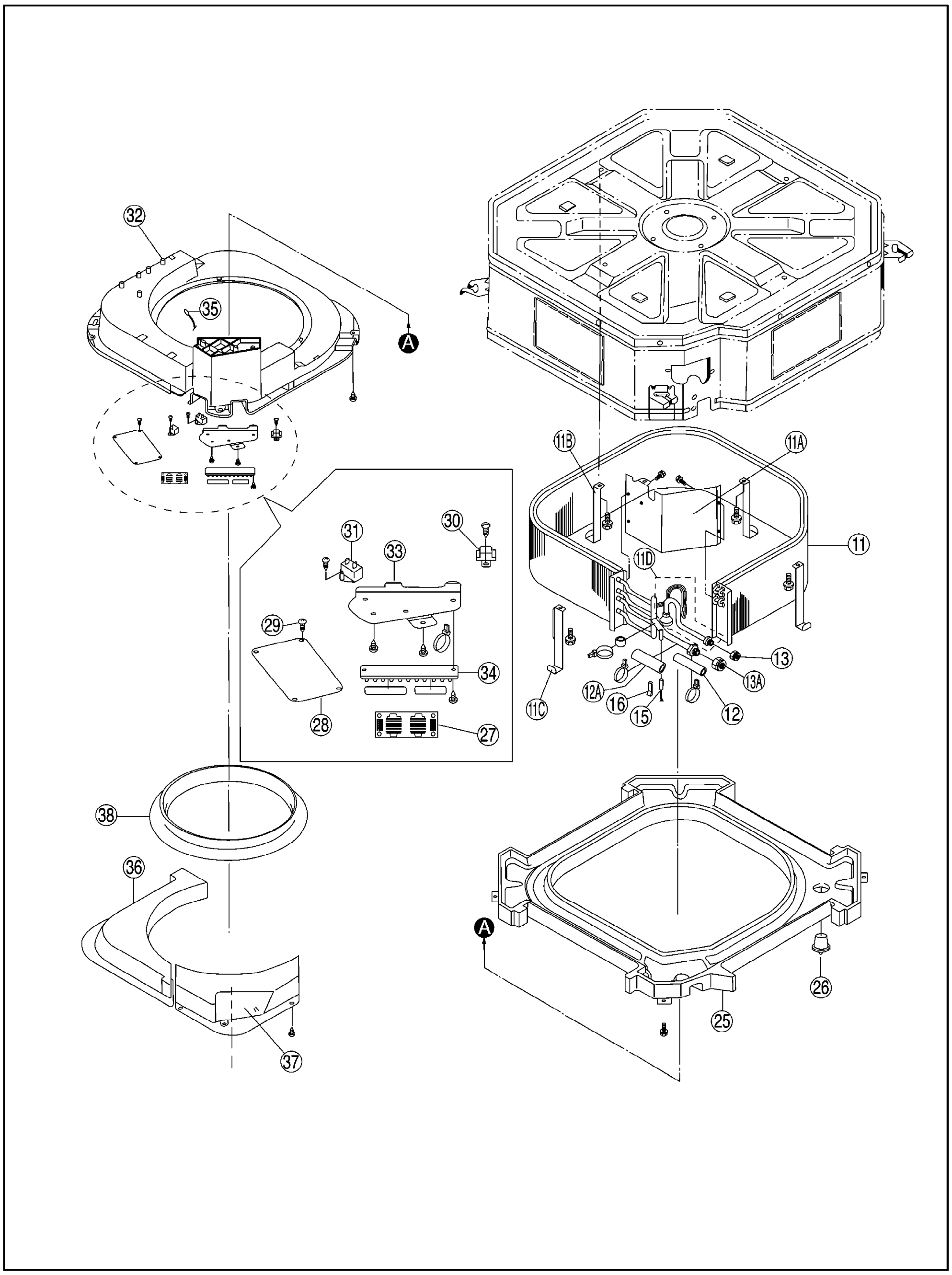
All indoor units



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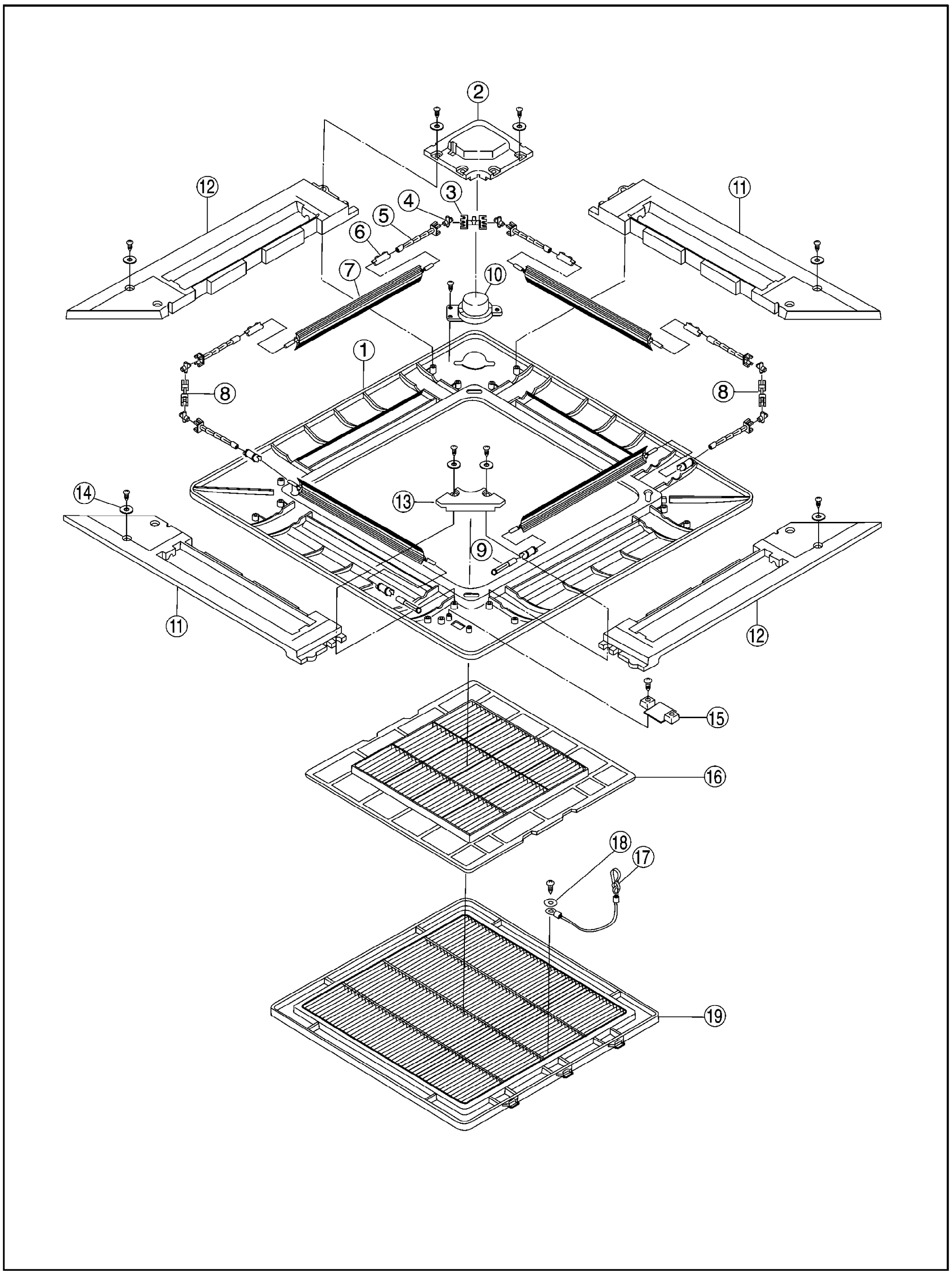
NO.	PART DESCRIPTION	QTY	CS-W18BB4P	CS-W24BB4P	CS-W28BB4P	CS-W34BB4P	CS-W43BB4P
1	BASE PAN ASS’Y	1	CWD52K1034	←	←	←	←
2	INNER POLYSTYRENE (TOP)	1	CWG071049	←	←	CWG071057	←
3	INNER POLYSTYRENE (SIDE)	1	CWG07C1016	←	←	CWG07C1017	←
4	CABINET SIDE PLATE ASS’Y	1	CWE04K1001	←	←	CWE04K1003	←
5	CABINET SIDE PLATE ASS’Y	1	CWE04K1002	←	←	CWE04K1004	←
6	FAN MOTOR	1	CWA921048	CWA921049	←	CWA921050	CWA921051
7	ANTI-VIBRATION BUSHING	4	CWH501016	←	←	←	←
8	SCREW-FAN MOTOR	4	CWH551032	←	←	←	←
9	CORD HOLDER	1	CWD74K1001	←	←	←	←
10	TURBO FAN	1	CWH03K1003	←	←	←	←
10a	NUT for TURBO FAN	1	XNG8	←	←	←	←
10b	SP WASHER	1	XWA8	←	←	←	←
10c	WASHER	1	CWH571008	←	←	←	←
11	EVAPORATOR	1	CWB30C1193	CWB30C1194	CWB30C1195	CWB30C1196	CWB30C1197
11a	EVAPORATOR SUPPORTER	1	CWD911115	←	←	CWD911116	←
11b	EVAPORATOR HOLDER	1	CWD911136	←	←	CWD911137	CWD911138
11c	EVAPORATOR HOLDER	1	-	-	-	CWD911127	CWD911128
11d	TUBE ASS’Y (CAPIL. TUBE-EVA)	1	CWT07K1062	CWT07K1063	CWT07K1063	CWT07K1065	CWT07K1066
12	HEATPROOF TUBE (24)	1	CWG021028	←	CWG021023	←	←
12a	HEATPROOF TUBE	1	CWG021021	←	←	←	←
13	”FLARE NUT (3/8”)/(1/4”)	1	6002140 (1/4”)	←	CWT25005 (3/8”)	←	←
13a	”FLARE NUT (6/8”)/(5/8”)	1	CWT25096	CWT25004 / (5/8”)	←	CWT251012 / (6/8”)	←
14	PIPE COVER	1	CWD93C1020	←	←	←	←
15	SENSOR-EVAPORATOR	1	CWA501047	←	←	←	←
16	SPRING FOR SENSOR	1	CWH711010	←	←	←	←
17	DRAIN PUMP COMPLETE	1	CWB53C1003	←	←	CWB53C1004	←
18	PANEL DRAIN PUMP ASS’Y	1	CWD93K1004	←	←	CWD93K1005	←
19	DRAIN PUMP	1	CWB532005	←	←	←	←
20	ANTI-VIBRATION BUSHING	3	CWH501017	←	←	←	←
21	FLOAT SWITCH - DRAIN PUMP	1	CWA121076	←	←	←	←
22	DRAIN NOZZLE	1	CWH411005	←	←	←	←
23	FLEXIBLE PIPE	1	CWH851030	←	←	←	←
24	DRAIN HOSE HEAT INSULATION	1	CWG101025	←	←	←	←
25	DRAIN PAN-COMPLETE	1	CWH40C1020	CWH40C1018	←	CWH40C1019	←
26	DRAIN PLUG	1	CWB82018	←	←	←	←
27	NOISE FILTER	1	CWA491018	←	←	←	←
28	ELECTRONIC CONTROLLER	1	CWA742528	←	←	←	←
29	SPACER	6	CWH541028	←	←	←	←
30	TRANSFORMER	1	CWA401028	←	←	←	←
31	CAPACITOR-FAN MOTOR (MF/V)	1	DS461165QP-A	DS461155QP-A (1.5/460)	DS461185QP-A (1.8/460)	DS461255QP-A (2.5/460)	DS461405QP-A (3/460)
32	CONTROL BOARD	1	CWH141005	←	←	←	←
33	HOLDER-TERMINAL BOARD	1	CWD932155	←	←	←	←
34	TERMINAL BOARD	1	CWA281015	←	←	←	←
35	LEADWIRE-FUSE&SENSOR	1	CWA67C3691	←	←	←	←
36	CONTROL BOARD COVER[CAUTION]	1	CWH13C1042	←	←	←	←

NO.	PART DESCRIPTION	QTY	CS-W18BB4P	CS-W24BB4P	CS-W28BB4P	CS-W34BB4P	CS-W43BB4P
37	CONT. BOARD COVER-WIRING DIAG.	1	CWH13C1043	←	←	←	←
38	AIR GUIDER BLOWER WHEEL	1	CWD321030	←	←	CWD321031	←
39	ACCESSORY COMPLETE	1	CWH82C1106	←	←	CWH82C1107	←
40	WIRED REMOTE CONTROL COMPLETE	1	CWA75C2239	←	←	←	←
41	WIRELESS R/CONTROL COMP. (HP)	1	CWA75C2247	←	←	←	←
41	WIRELESS R/CONTROL COMP. (C)	1	CWA75C2250	←	←	←	←
42	RAY RECEIVER (HEAT PUMP MODEL)	1	CWD76C1003	←	←	←	←
42	RAY RECEIVER (COOLING ONLY)	1	CWD76C1002	←	←	←	←
	OPERATING INSTRUCTION	1	CWF563597	←	←	←	←
	INSTALLATION INSTRUCTION	1	CWF612268	←	←	←	←

All parts are supplied from MACC, Malaysia (Vendor Code: 086)

All indoor units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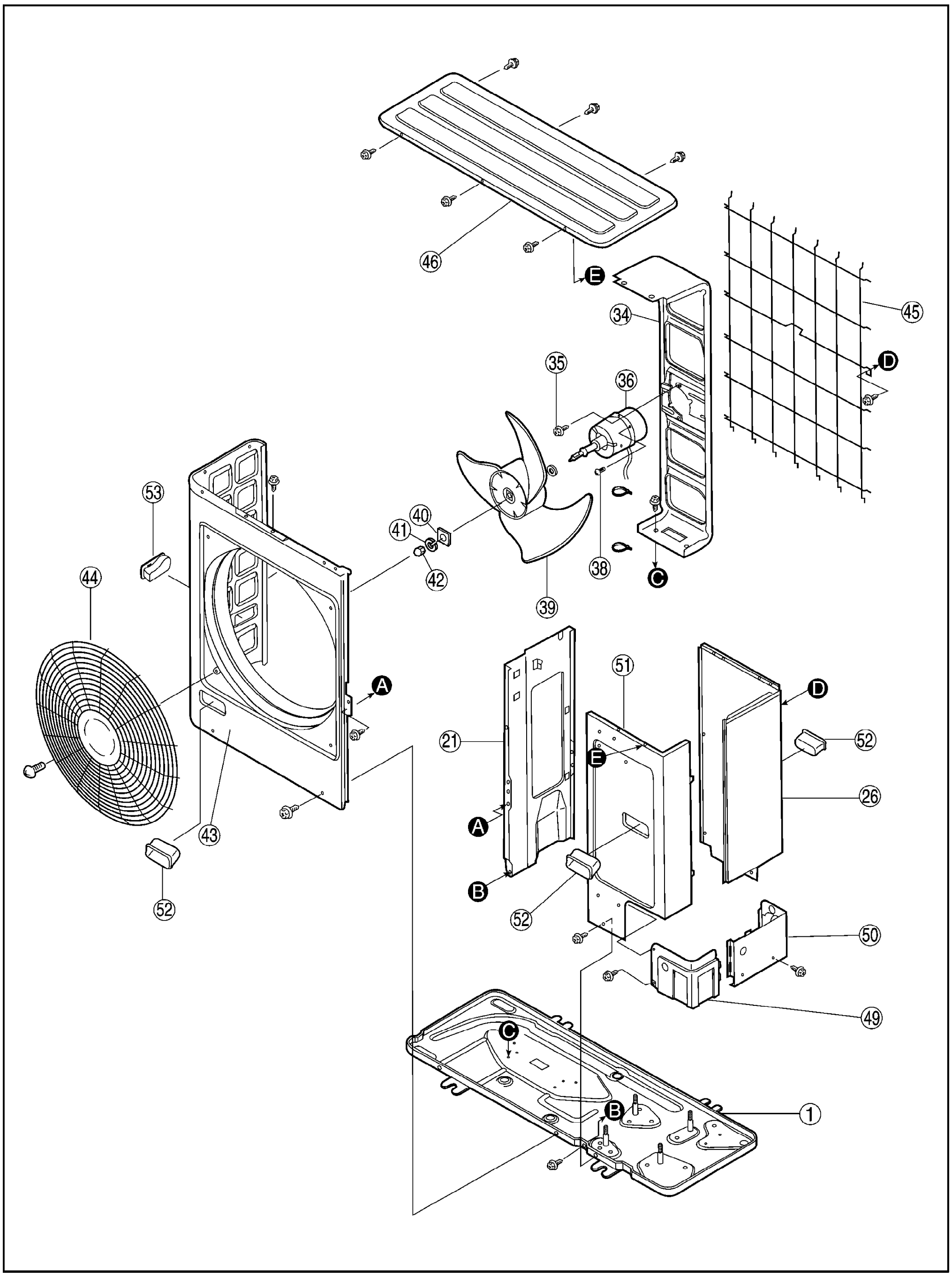
NO.	PART DESCRIPTION	PART NO.	QTY.
1	FRONT GRILLE	CWE121026	1
2	COVER-AIR SWING MOTOR	CWH811013	1
3	CONNECTOR-SHAFT	CWH081002	1
4	CONNECTOR-SHAFT	CWH081003	6
5	CONNECTOR-SHAFT	CWH081004	6
6	BEARING	CWH641006	8
7	VANE	CWE241103	4
8	CONNECTOR-SHAFT	CWH081005	2
9	CONNECTOR-SHAFT	CWH081006	2
10	AIR SWING MOTOR	CWA981065	1
11	INSULATION POLYSTYRENE	CWG071105	2
12	INSULATION POLYSTYRENE	CWG071106	2
13	INSULATION POLYSTYRENE	CWG071107	1
14	WASHER	CWH571025	16
15	COVER	CWD932215	1
16	AIR FILTER	CWD001072	1
17	STRING	CWH841002	2
18	WASHER	CWH571026	2
19	INTAKE GRILLE	CWE221067	1

All parts are supplied from MACC, Malaysia (Vendor Code: 086)

30.2. OUTDOOR UNIT

CU-W18BBP5, CU-V18BBP5, CU-W24BBP5, CU-V24BBP5, CU-V24BBP8,
CU-W28BBP5, CU-W28BBP8, CU-V28BBP5, CU-V28BBP8



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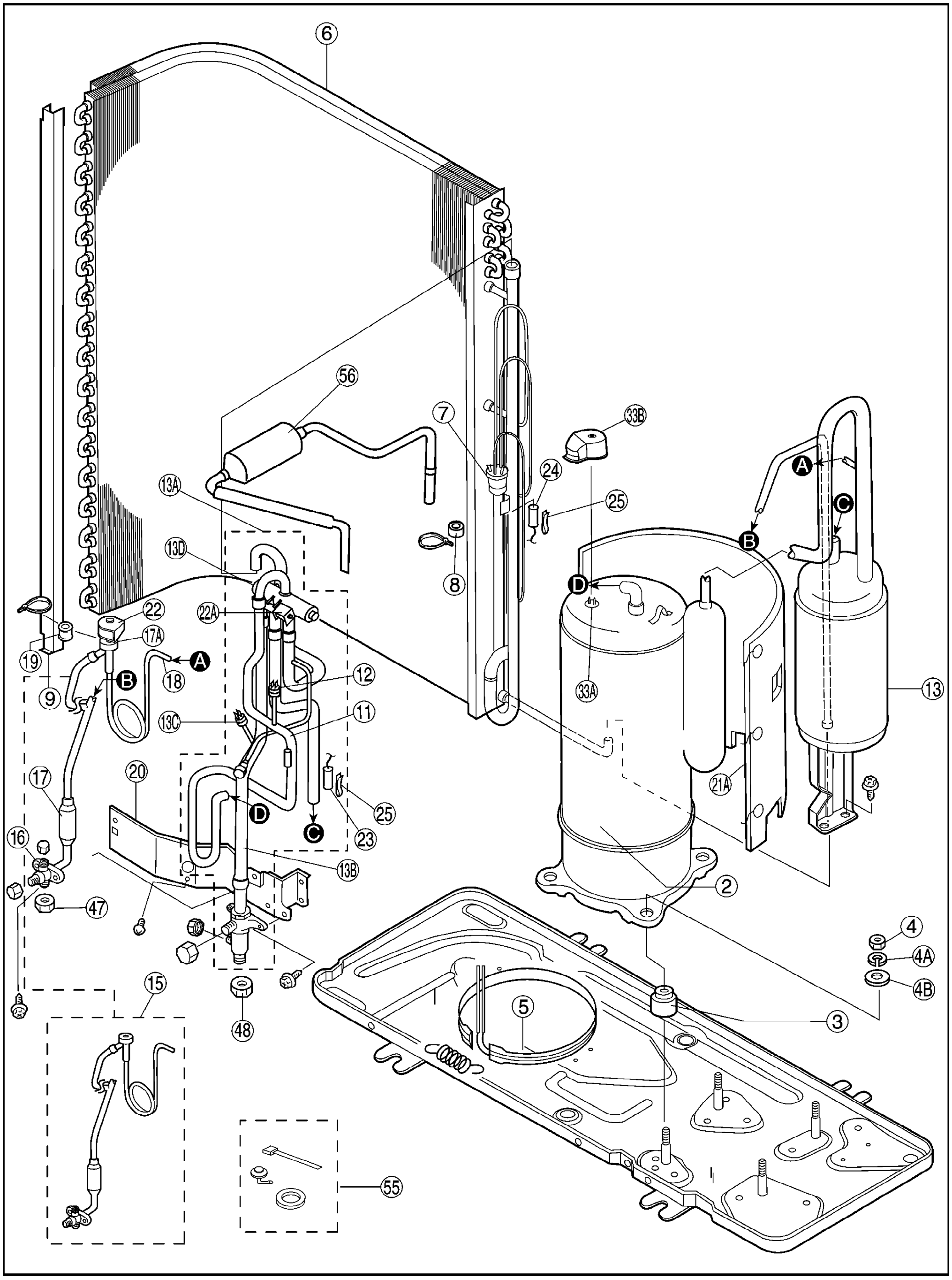
CU-W18BBP5, CU-W24BBP5, CU-W28BBP5, CU-W28BBP8 (Heat pump type)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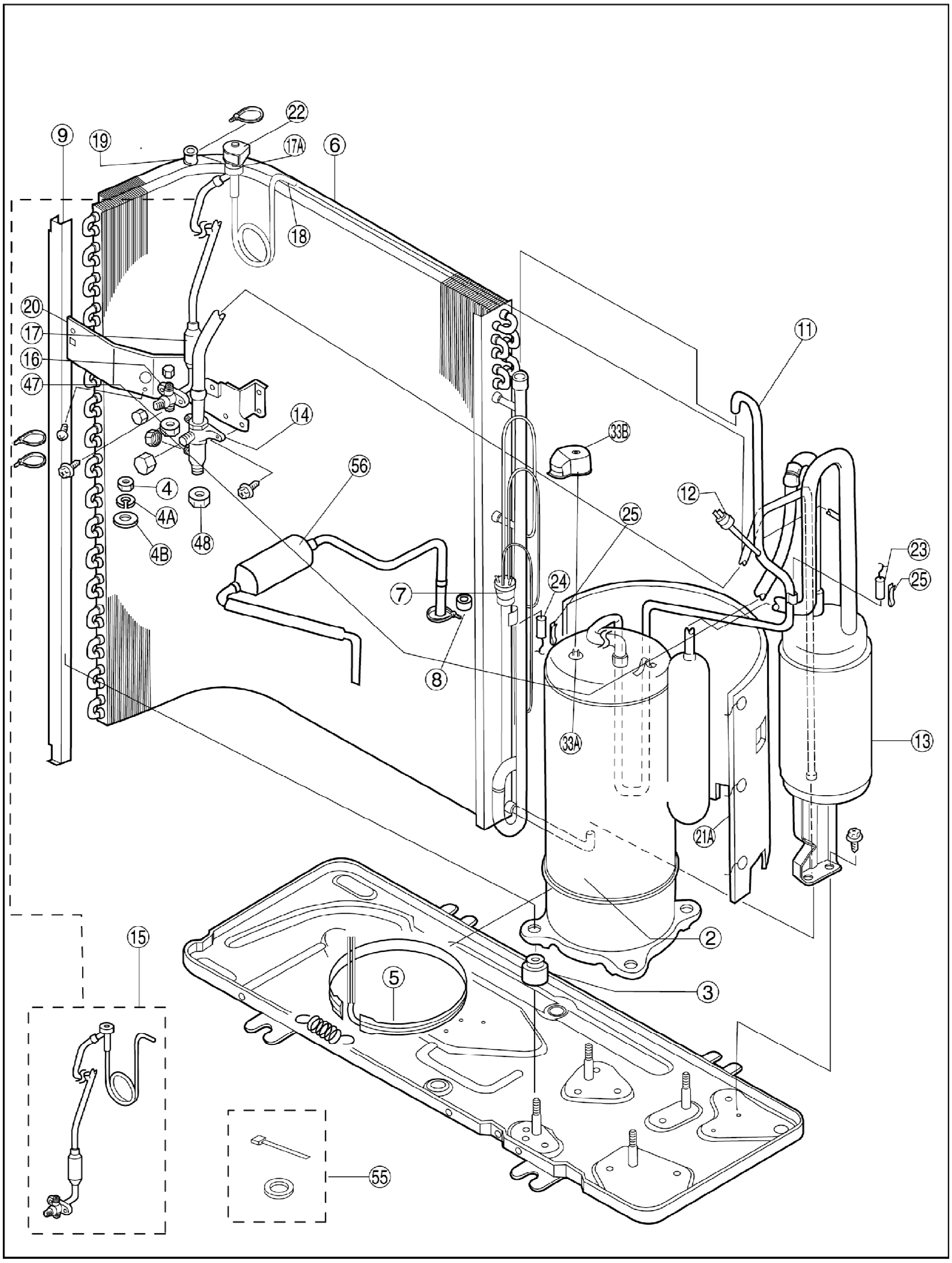
CU-V18BBP5, CU-V24BBP5, CU-V24BBP8, CU-V28BBP5, CU-V28BBP8 (Cooling only type)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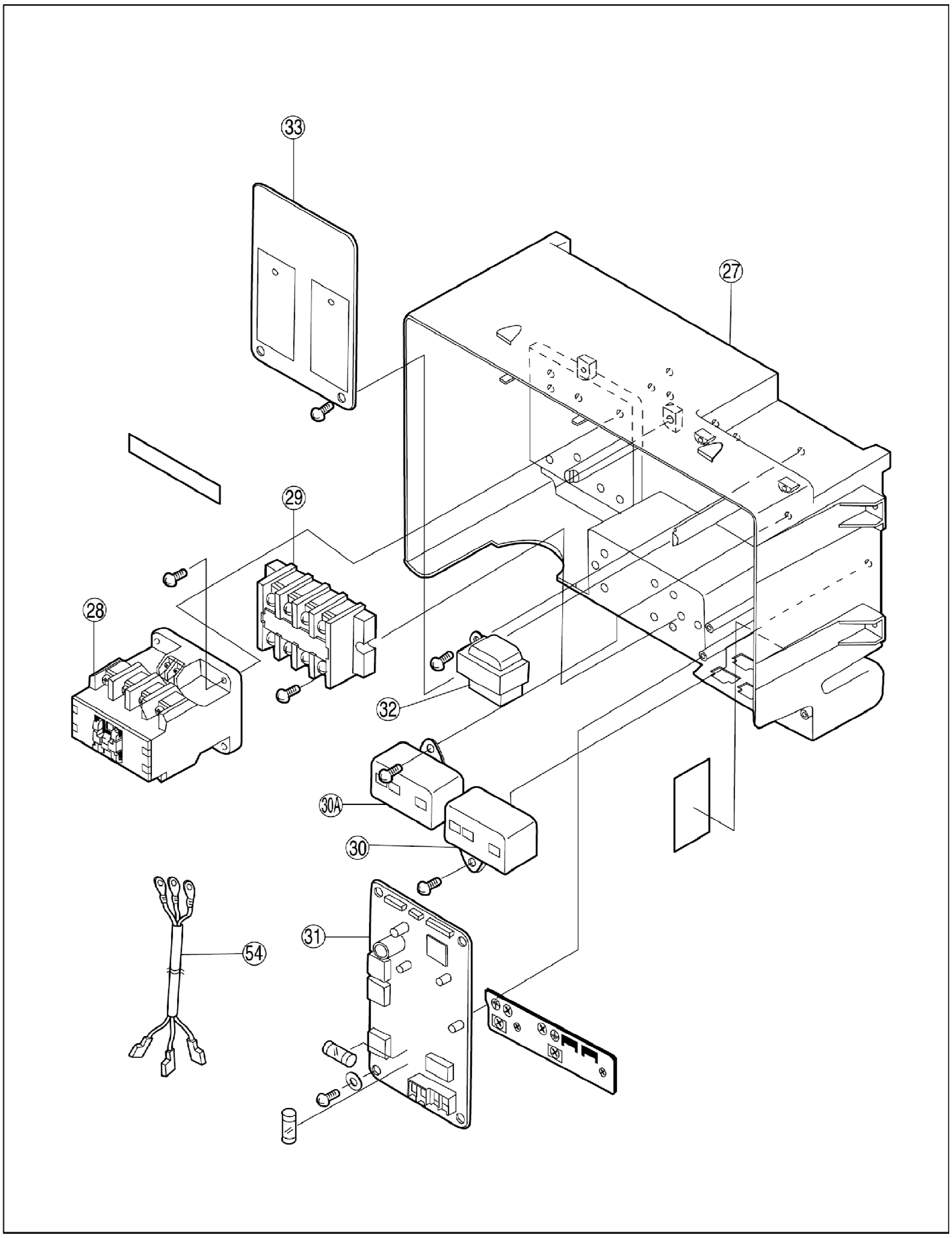
CU-W18BBP5, CU-V18BBP5, CU-W24BBP5, CU-V24BBP5, CU-V24BBP8,
CU-W28BBP5, CU-W28BBP8, CU-V28BBP5, CU-V28BBP8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CU-W18BBP5, CU-W24BBP5, CU-W28BBP5, CU-W28BBP8

NO.	PART DESCRIPTION	QTY.	CU-W18BBP5	CU-W24BBP5	CU-W28BBP5	CU-W28BBP8
1	BASE PAN ASS'Y	1	CWD52K1050A	CWD52K1038A	←	←
2	COMPRESSOR	1	PE31VNEMT	NE41VNHMT	NE44VNHMT	NE44YDNMT
3	ANTI-VIBRATION BUSHING	4	CWH501018	←	←	←
4	NUT FOR COMP. MOUNT.	3	XNG8	←	←	←
4a	WASHER for COMPRESSOR	3	XWA8	←	←	←
4b	SP WASHER	3	CWH571018	←	←	←
5	CRANKCASE HEATER	1	CWA341006	CWA341005	←	←
6	CONDENSER COMPLETE	1	CWB32C1193	CWB32C1194	CWB32C1195	←
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1072	CWT07K1073	CWT07K1074	←
8	PIPE HOLDER RUBBER	1	CWG251016	←	←	←
9	CONDENSER SIDE PLATE	1	CWD911122	←	←	←
11	TUBE ASS'Y(PRESSURE SWITCH)	1	CWT022597	CWT022593	←	←
12	HIGH PRESSURE SWITCH	1	CWA101003	←	←	←
13	ACCUMULATOR	1	CWB131007A	←	CWB131008A	←
13a	4-WAYS VALVE COMPLETE	1	CWB00C1004	CWB00C1005	CWB00C1006	←
13b	TUBE ASS'Y (PRESS.SW + VALVE)	1	CWT022598	CWT022595	←	←
13c	HEATING PRESSURE SWITCH	1	CWA101004	←	←	←
13d	4-WAYS VALVE	1	CWB00003	←	←	←
15	TUBE ASS'Y (VALVE+STRAINER)	1	CWT022626	CWT022627	CWT022628	←
16	3-WAYS VALVE	1	CWB011089	←	CWB011090	←
17	STRAINER	1	CWB111005	←	←	←
17a	2-WAYS VALVE	1	-	-	CWB02229	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1041	CWB15K1065	CWB15K1037	←
19	PIPE HOLDER RUBBER	1	CWG251013	←	←	←
20	HOLDER-SERVICE VALVE	1	CWD911191	CWD911124	←	←
21	SOUND-PROOF BOARD ASS'Y	1	CWH151016	←	←	←
21a	SOUND PROOF MATERIAL-COMP	1	CWG302130	CWG302098	←	←
22	V-COIL COMPLETE	1	-	-	CWA43C2068	←
22a	V-COIL COMPLETE (4 WAY VALVE)	1	CWA43C2060	←	←	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501042	←	←	←
24	PIPING SENSOR (COIL)	1	CWA501043	←	←	←
25	SPRING FOR SENSOR	2	CWH711010	←	←	←
26	CABINET REAR PLATE	1	CWE02C1005	←	←	←
27	CONTROL BOARD	1	CWH141004	←	←	←
28	COMPRESSOR RELAY	1	CWA001005	←	←	CWA001007
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	←	←	CWA28K1029
30	CAPACITOR-FAN MOTOR	1	DS461255QP-A (2.5/460)	DS461305QP-A (3.0/460)	←	←
30a	CAPACITOR-COMPRESSOR	1	DS371456CPNA (45/370)	DS441456CPNB (45/440)	DS441506CPNB (50/440)	-
31	ELECTRONIC CONTROLLER	1	CWA742583	←	←	CWA742584
32	TRANSFORMER	1	CWA401029	←	←	←
33	CURRENT TRANSFORMER BOARD	1	CWA742592	←	CWA742591	CWA742592
33a	OVERLOAD PROTECTOR	1	-	-	-	CWA121075
33b	TERMINAL COVER	1	CWH171019	←	←	CWH171022
34	BRACKET FAN MOTOR	1	CWD541027	←	←	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←	←
36	FAN MOTOR	1	CWA951077	CWA951078	←	←
38	SCREW-FAN MOTOR	4	CWH55442	←	←	←

NO.	PART DESCRIPTION	QTY.	CU-W18BBP5	CU-W24BBP5	CU-W28BBP5	CU-W28BBP8
39	PROPELLER FAN	1	CWH001007	←	←	←
40	WASHER for P.FAN	1	CWH571013	←	←	←
41	SPRING WASHER for P.FAN	1	XWB10B	←	←	←
42	NUT for PROPELLER FAN	1	CWH56033	←	←	←
43	P.FAN AIR GUIDER PLATE	1	CWE061036A	←	←	←
44	FAN GUARD	1	CWD041014A	←	←	←
45	CONDENSER GUARD	1	CWD041015A	←	←	←
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	←	←	←
47	FLARE NUT (1/4”) / (3/8”)	1	CWH6002140	←	CWT25005	←
48	FLARE NUT (5/8”)	1	CWT25096	CWT25004	←	←
49	PIPE COVER (FRONT)	1	CWD601017A	←	←	←
50	PIPE COVER (BACK)	1	CWD601018A	←	←	←
51	CABINET FRONT PLATE	1	CWE06C1033	←	←	←
52	HANDLE	3	CWE161008	←	←	←
53	HANDLE	1	CWE161009	←	←	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3657	←	←	CWA67C3665
55	ACCESSORY COMPLETE	1	CWH82C1105	←	←	←
	INSTALLATION INSTRUCTION	1	CWF612270	←	←	←
56	DRYER	1	CWB101013	←	CWB101014	←

All parts are supplied from MACC, Malaysia (Vendor Code: 086)

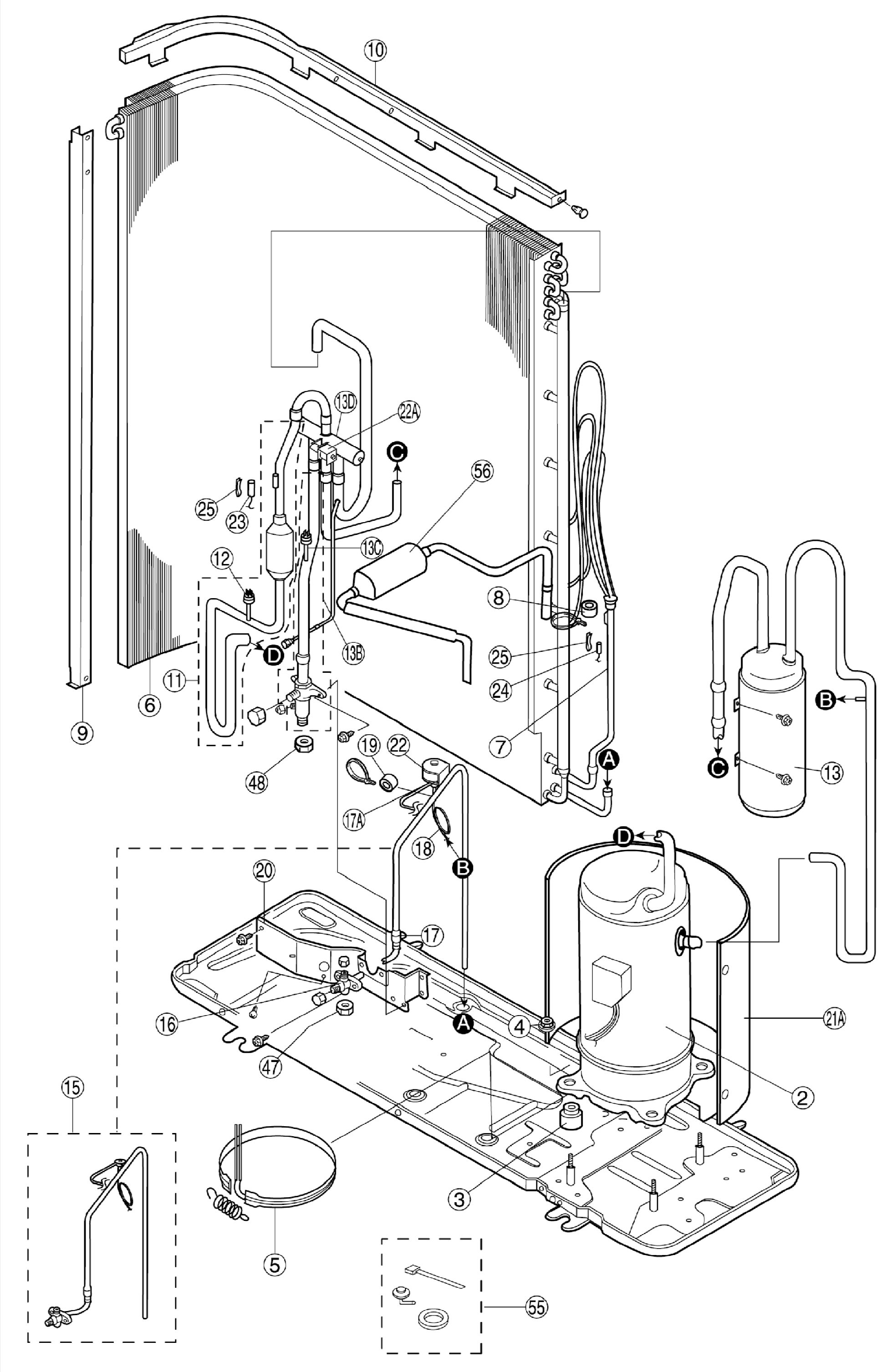
CU-V18BBP5, CU-V24BBP5, CU-V24BBP8, CU-V28BBP5, CU-V28BBP8

NO.	PART DESCRIPTION	QTY.	CU-V18BBP5	CU-V24BBP5	CU-V24BBP8	CU-V28BBP5	CU-V28BBP8
1	BASE PAN ASS’Y	1	CWD52K1050A	CWD52K1038A	←	←	←
2	COMPRESSOR	1	PE31VNEMT	NE41VNHMT	NE41YDNMT	NE44VNHMT	NE44YDNMT
3	ANTI-VIBRATION BUSHING	4	CWH511040	CWH501018	←	←	←
4	NUT FOR COMP. MOUNT.	3	XNG8	←	←	←	←
4a	WASHER for COMPRESSOR	3	XWA8	←	←	←	←
4b	SP WASHER	3	CWH571018	←	←	←	←
5	CRANKCASE HEATER	1	CWA341006	CWA341005	←	←	←
6	CONDENSER COMPLETE	1	CWB32C1188	CWB32C1189	←	CWB32C1190	←
7	TUBE ASS’Y (CAPILLARY TUBE)	1	CWT07K1077	CWT07K1078	←	CWT07K1081	←
8	PIPE HOLDER RUBBER	1	CWG251016	←	←	←	←
9	CONDENSER SIDE PLATE	1	CWD911122	←	←	←	←
11	TUBE ASS’Y (PRESSURE SWITCH)	1	CWT022588	CWT022584	←	←	←
12	HIGH PRESSURE SWITCH	1	CWA101003	←	←	←	←
13	ACCUMULATOR	1	CWB131007A	←	←	CWB131008A	←
14	TUBE ASS’Y (3 WAYS VALVE)	1	CWT022585	←	←	CWT022591	←
15	TUBE ASS’Y (VALVE+STRAINER)	1	CWT022587	CWT022583	←	CWT022589	←
16	3-WAYS VALVE	1	CWB011086	CWB011087	←	←	←
17	STRAINER	1	NOT AVAILABLE	←	←	←	←
17a	2-WAYS VALVE	1	-	-	-	CWB02299	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1041	CWB15K1065	←	CWB15K1068	←
19	PIPE HOLDER RUBBER	1	CWG251013	←	NOT AVAILABLE	CWG251013	←

NO.	PART DESCRIPTION	QTY.	CU-V18BBP5	CU-V24BBP5	CU-V24BBP8	CU-V28BBP5	CU-V28BBP8
20	HOLDER-SERVICE VALVE	1	CWD911191	CWD911124	←	←	←
21	SOUND-PROOF BOARD ASS'Y	1	CWH151016	←	←	←	←
21a	SOUND PROOF MATERIAL-COMP	1	CWG302130	CWG302098	←	←	←
22	V-COIL COMPLETE	1	-	-	-	CWA43C2068	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501042	←	←	←	←
24	PIPING SENSOR (COIL)	1	CWA501043	←	←	←	←
25	SPRING FOR SENSOR	2	CWH711010	←	←	←	←
26	CABINET REAR PLATE	1	CWE02C1005	←	←	←	←
27	CONTROL BOARD	1	CWH141004	←	←	←	←
28	COMPRESSOR RELAY	1	CWA001005	←	CWA001007	CWA001005	CWA001007
29	TERMINAL BOARD ASS'Y	1	CWA28K1027	←	CWA28K1029	CWA28K1027	CWA28K1029
30	CAPACITOR-FAN MOTOR (3/460)	1	DS461255QP-A (2.5/460)	DS461305QP-A (3/460)	←	←	←
30a	CAPACITOR-COMP (MF/V)	1	DS371456CPNA (45/370)	DS441456CPNB (45/440)	-	DS441506CPNB (50/440)	-
31	ELECTRONIC CONTROLLER	1	CWA742587	←	CWA742588	CWA742587	CWA742588
32	TRANSFORMER	1	CWA401029	←	←	←	←
33	CURRENT TRANSFORMER BOARD	1	CWA742592	←	←	CWA742591	CWA742592
33a	OVERLOAD PROTECTOR	1	-	-	CWA121075	-	CWA121075
33b	TERMINAL COVER	1	CWH171019	←	CWH171022	CWH171019	CWH171022
34	BRACKET FAN MOTOR	1	CWD541027	←	←	←	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←	←	←	←
36	FAN MOTOR	1	CWA951077	CWA951078	←	←	←
38	SCREW-FAN MOTOR	4	CWH55442	←	←	←	←
39	PROPELLER FAN	1	CWH001007	←	←	←	←
40	WASHER for P.FAN	1	CWH571013	←	←	←	←
41	SPRING WASHER for P.FAN	1	XWB10B	←	←	←	←
42	NUT for PROPELLER FAN	1	CWH56033	←	←	←	←
43	P.FAN AIR GUIDER PLATE	1	CWE061036A	←	←	←	←
44	FAN GUARD	1	CWD041014A	←	←	←	←
45	CONDENSER GUARD	1	CWD041015A	←	←	←	←
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	←	←	←	←
47	FLARE NUT (1/4") / (3/8")	1	CWH6002140	←	←	CWT25005	←
48	FLARE NUT (5/8")	1	CWT25096	CWT25004	←	←	←
49	PIPE COVER (FRONT)	1	CWD601017A	←	←	←	←
50	PIPE COVER (BACK)	1	CWD601018A	←	←	←	←
51	CABINET FRONT PLATE	1	CWE06C1033	←	←	←	←
52	HANDLE	3	CWE161008	←	←	←	←
53	HANDLE	1	CWE161009	←	←	←	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3657	←	CWA67C3665	CWA67C3657	CWA67C3665
55	ACCESSORY COMPLETE	1	CWH82C1105	←	←	←	←
	INSTALLATION INSTRUCTION	1	CWF612270	←	←	←	←
56	DRYER	1	CWB101013	←	←	CWB101014	←

All parts are supplied from MACC Malaysia (Vendor Code : 086)

CU-W34BBP8, CU-W43BBP8 (Heat pump type)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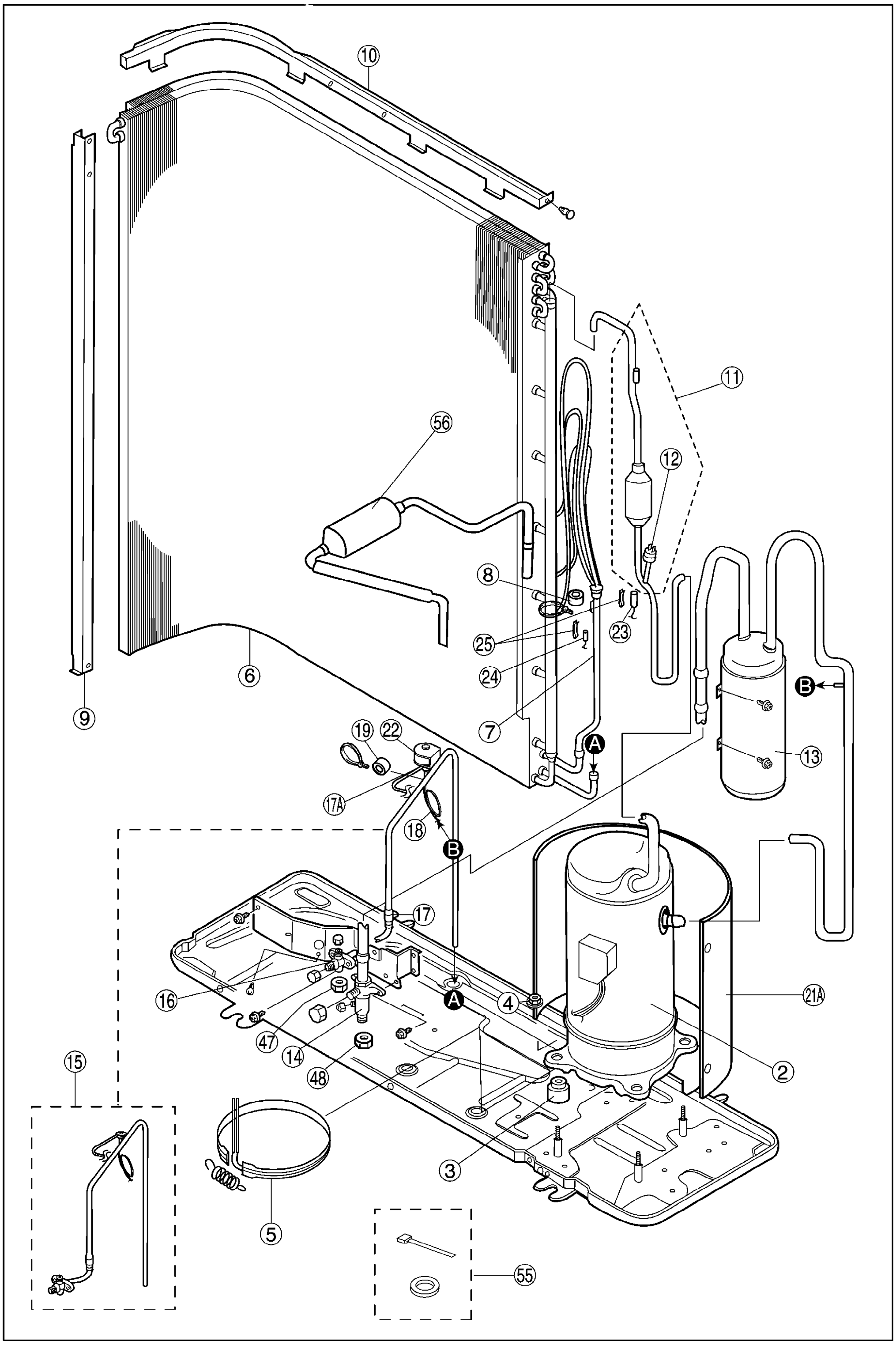
CU-V34BBP8, CU-V43BBP8 (Cooling only type)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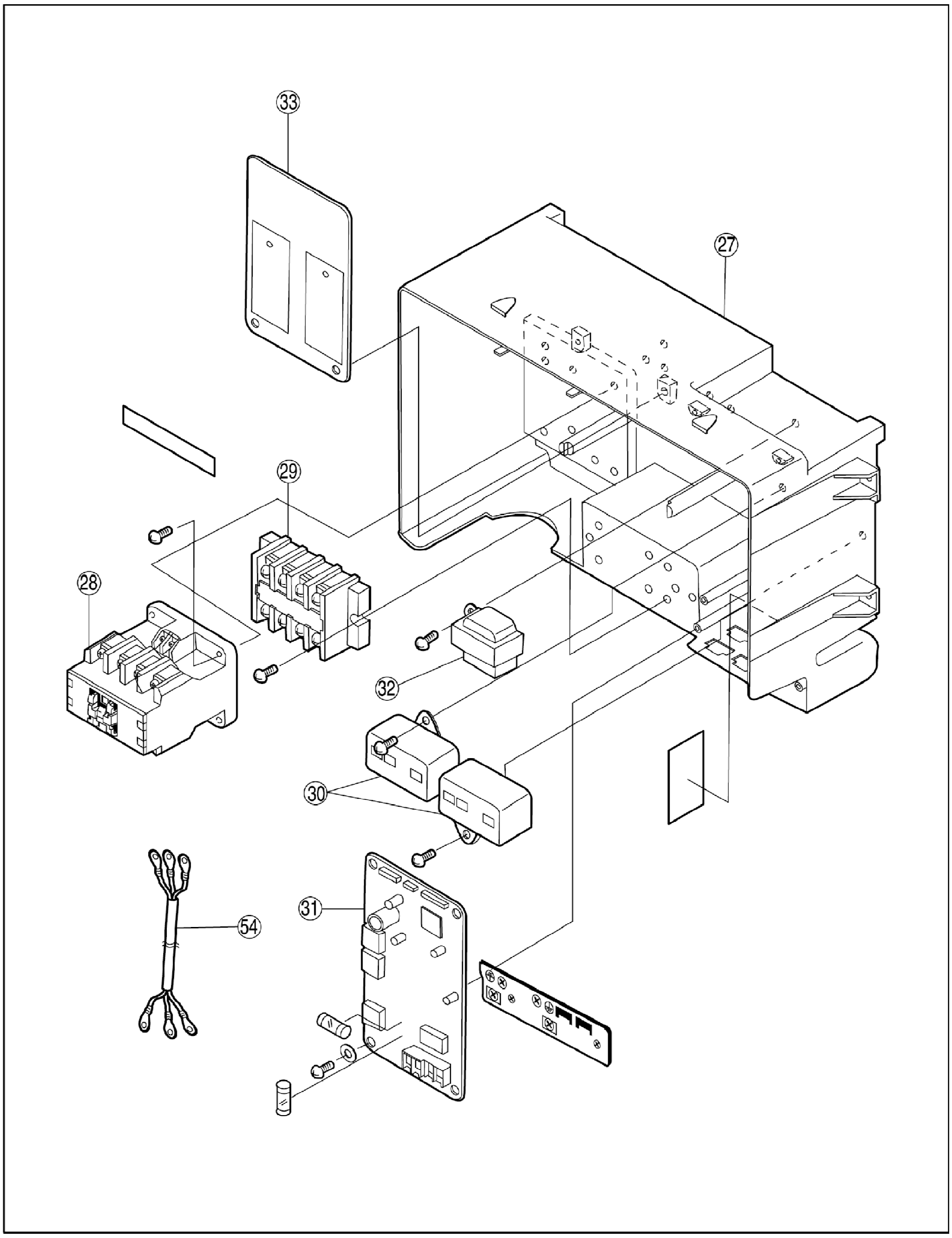
CU-W34BBP8, CU-V34BBP8, CU-W43BBP8, CU-V43BBP8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CU-W34BBP8, CU-W43BBP8

NO.	PART DESCRIPTION	QTY.	CU-W34BBP8	CU-W43BBP8
1	BASE PAN ASS'Y	1	CWD52K1039A	CWD52K1040A
2	COMPRESSOR	1	ZR48KCE-TFD	ZR57KCE-TFD
3	ANTI-VIBRATION BUSHING	4	CWH501020	←
4	NUT FOR COMP. MOUNT.	3	CWH4582065	←
5	CRANKCASE HEATER	1	CWA341004	CWA341002
6	CONDENSER COMPLETE	1	CWB32C1196	CWB32C1197
7	TUBE ASS'Y (CAPILLARY TUBE)	1	CWT07K1075	CWT07K1076
8	PIPE HOLDER RUBBER	1	CWG251016	CWG251021
9	CONDENSER SIDE PLATE	1	CWD911123	←
10	CONDENSER TOP PLATE	1	CWD911132	CWD911133
11	TUBE ASS'Y (PRESSURE SWITCH)	1	CWT022615	CWT022618
12	HIGH PRESSURE SWITCH	1	CWA101003	←
13	ACCUMULATOR	1	CWB13K1022	CWB13C1020
13b	TUBE ASS'Y (PRESS.SW + VALVE)	1	CWT022617	CWT022620
13c	HEATING PRESSURE SWITCH		CWA101004	←
13d	4-WAYS VALVE	1	CWB001014	CWB001015
15	TUBE ASS'Y (VALVE+STRAINER)	1	CWT022629	←
16	3-WAYS VALVE		CWB011091	←
17	STRAINER		CWB111005	←
17a	2-WAYS VALVE		CWB02299	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1037	CWB15K1039
19	PIPE HOLDER RUBBER	1	CWG251015	←
20	HOLDER-SERVICE VALVE	1	CWD911131	←
21	SOUND-PROOF BOARD ASS'Y	1	CWH15K1010	←
21a	SOUND PROOF MATERIAL-COMP.	1	CWG302101	CWG302103
22	V-COIL COMPLETE	1	CWA43C2067	←
22a	V-COIL COMPLETE-4 WAY VALVE	1	CWA43C2063	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501044	←
24	PIPING SENSOR (COIL)	1	CWA501045	←
25	SPRING FOR SENSOR	2	CWH711010	←
26	CABINET REAR PLATE	1	CWE021012A	CWE02C1010
27	CONTROL BOARD	1	CWH141004	←
28	COMPRESSOR RELAY	1	CWA001005	←
29	TERMINAL BOARD ASS'Y	1	CWA28K1029	←
30	CAPACITOR-FAN MOTOR	2	DS461305QP-A (3.0/460)	DS461355QP-A (3.5/460)
31	ELECTRONIC CONTROLLER	1	CWA742585	←
32	TRANSFORMER	1	CWA401029	←
33	CURRENT TRANSFORMER BOARD	1	CWA742592	←
34	BRACKET-FAN MOTOR	1	CWD541028	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←
36	FAN MOTOR	2	CWA951078	←
38	SCREW-FAN MOTOR	8	CWH55442	←
39	PROPELLER FAN	2	CWH001007	←
40	WASHER for P.FAN	2	CWH571013	←
41	SPRING WASHER for P.FAN	2	XWB10B	←
42	NUT for PROPELLER FAN	2	CWH56033	←
43	P.FAN AIR GUIDER PLATE	1	CWE061042A	CWE061044A
44	FAN GUARD	2	CWD041014A	←
45	CONDENSER GUARD	1	CWD041016A	CWD041017A
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	CWE03C1005

NO.	PART DESCRIPTION	QTY.	CU-W34BBP8	CU-W43BBP8
47	FLARE NUT (3/8”)	1	CWT25005	←
48	FLARE NUT (6/8”)	1	CWT251012	←
49	PIPE COVER (FRONT)	1	CWD601017A	←
50	PIPE COVER (BACK)	1	CWD601018A	←
51	CABINET FRONT PLATE	1	CWE061046A	←
52	HANDLE	3	CWE161008	←
53	HANDLE	1	CWE161009	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3656	←
55	ACCESSORY COMPLETE	1	CWH82C1105	←
	INSTALLATION INSTRUCTION	1	CWF612270	←
56	DRYER	1	CWB101014	←

The above parts are kept for seven years in accordance with MEI service policy.

CU-V34BBP8, CU-V43BBP8

NO.	PART DESCRIPTION	QTY.	CU-V34BBP8	CU-V43BBP8
1	BASE PAN ASS’Y	1	CWD52K1039A	CWD52K1040A
2	COMPRESSOR	1	ZR48KCE-TFD	ZR57KCE-TFD
3	ANTI-VIBRATION BUSHING	4	CWH501020	←
4	NUT FOR COMP. MOUNT.	3	CWH4582065	←
5	CRANKCASE HEATER	1	CWA341004	CWA341002
6	CONDENSER COMPLETE	1	CWB32C1191	CWB32C1192
7	TUBE ASS’Y (CAPILLARY TUBE)	1	CWT07K1079	CWT07K1080
8	PIPE HOLDER RUBBER	1	CWG251016	CWG251021
8	PIPE HOLDER RUBBER	1	CWG251015	←
9	CONDENSER SIDE PLATE	1	CWD911123	←
10	CONDENSER TOP PLATE	1	CWD911132	CWD911133
11	TUBE ASS’Y (PRESSURE SW+RCVR)	1	CWT022607	CWT022611
12	HIGH PRESSURE SWITCH	1	CWA101003	←
13	ACCUMULATOR	1	CWB131014A	CWB131015A
14	TUBE ASS’Y (3 WAY VALVE-GAS)	1	CWT022606	←
15	TUBE ASS’Y (VALVE+STRAINER)	1	CWT022609	←
16	3-WAYS VALVE	1	CWB011091	←
17	STRAINER	1	CWB111010	←
17a	2-WAYS VALVE	1	CWB02299	←
18	CAPILLARY TUBE for VALVE	1	CWB15K1037	CWB15K1039
19	PIPE HOLDER RUBBER	1	CWG251015	←
21	SOUND-PROOF BOARD ASS’Y	1	CWH15K1010	←
21a	SOUND PROOF MATERIAL-COMP.	1	CWG302101	CWG302103
22	V-COIL COMPLETE	1	CWA43C2067	←
23	PIPING SENSOR (DISCHARGE)	1	CWA501044	←
24	PIPING SENSOR (COIL)	1	CWA501045	←
25	SPRING FOR SENSOR	2	CWH711010	←
26	CABINET REAR PLATE	1	CWE021012A	CWE02C1009
27	CONTROL BOARD	1	CWH141004	←
28	COMPRESSOR RELAY	1	CWA001005	←
29	TERMINAL BOARD ASS’Y	1	CWA28K1029	←

NO.	PART DESCRIPTION	QTY.	CU-V34BBP8	CU-V43BBP8
30	CAPACITOR-FAN MOTOR	2	DS461305QP-A (3.0/460)	DS461355QP-A (3.5/460)
31	ELECTRONIC CONTROLLER	1	CWA742586	←
32	TRANSFORMER	1	CWA401029	←
33	CURRENT TRANSFORMER BOARD	1	CWA742592	←
34	BRACKET FAN MOTOR	1	CWD541028	←
35	SCREW-BRACKET FAN MOTOR	4	CWH551040	←
36	FAN MOTOR	2	CWA951078	←
38	SCREW-FAN MOTOR	8	CWH55442	←
39	PROPELLER FAN	2	CWH001007	←
40	WASHER for P.FAN	2	CWH571013	←
41	SPRING WASHER for P.FAN	2	XWB10B	←
42	NUT for PROPELLER FAN	2	CWH56033	←
43	P.FAN AIR GUIDER PLATE	1	CWE061042A	CWE061044A
44	FAN GUARD	2	CWD041014A	←
45	CONDENSER GUARD	1	CWD041016A	CWD041017A
46	CABINET TOP PLATE COMPLETE	1	CWE03C1004	CWE03C1005
47	FLARE NUT (3/8”)	1	CWT25005	←
48	FLARE NUT (6/8”)	1	CWT251012	←
49	PIPE COVER (FRONT)	1	CWD601017A	←
50	PIPE COVER (BACK)	1	CWD601018A	←
51	CABINET FRONT PLATE	1	CWE061046A	←
52	HANDLE	3	CWE161008	←
53	HANDLE	1	CWE161009	←
54	LEADWIRE-COMPRESSOR	1	CWA67C3656	←
55	ACCESSORY COMPLETE	1	CWH82C1105	←
	INSTALLATION INSTRUCTION	1	CWF612270	←
56	DRYER	1	CWB101014	←

All parts are supplied from MACC Malaysia (Vendor Code : 086)

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